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A report prepared for the Master Plan Survey Team and the Liaison Committee of the Regents of the University of California and the State Board of Education. Numerous statistical tables accompany the text. Reviews trends of expenditures for higher education in California from the years 1948–49 through 1957–58 and analyzes operating costs for 1957-58. A chapter devoted to an analysis of the cost of establishing new institutions of higher education and of expanding existing ones also discusses uncertain and intangible factors involved in predicting costs of expanded or new institutions. The concluding chapter projects costs of higher education through 1975, taking cognizance of the fact that the results may be conditioned by many unknown or unforeseen variables. The appendix presents the summary of a report on estimated library costs in California institutions of higher education prepared by a committee of the California Library Association.

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Prepared for the Master Plan Survey Team
and the Liaison Committee of
The Regents of the University of California
and the State Board of Education

By the
TECHNICAL COMMITTEE ON COSTS OF
HIGHER EDUCATION IN CALIFORNIA

8090

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A Report on

The Costs of Higher Education in California 1960-1975

Prepared for the Master Plan Survey Team and the Liaison Committee of The Regents of the University of California and the State Board of Education

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THE TECHNICAL COMMITTEE ON COSTS OF HIGHER EDUCATION IN CALIFORNIA

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January 20, 1960

Dr. Arthur G. Coons
Chairman, Master Plan Survey Team, and
President, Occidental College
1600 Campus Road
Los Angeles 41, California

Dear Dr. Coons:

In accordance with the action of the Liaison Committee of the State Board of Education and The Regents of the University of California on July 8, 1959, in approving the appointment of a representative committee to study costs of higher education in California to 1975, and your subsequent letter outlining the scope of the Committee's responsibility, we have prepared and now transmit our final report entitled, "The Costs of Higher Education in California." In the preparation of this report we have endeavored to follow the suggestions on format, organization, headings, length of report, and the like, as contained in the August 17, September 18, and December 1 memoranda from your office.

The Committee wishes to thank the University of California for providing office facilities for use as a headquarters and for extending many courtesies to the Committee members. Also, it wishes to express appreciation to all who cooperated in providing information or otherwise assisted with the project.

Very truly yours,

A. E. Joyal, *Chairman*
Technical Committee on Costs of
Higher Education in California

Oscar E. Anderson
Arthur J. Hall
Daniel B. Milliken

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Foreword

The Technical Committee on Costs of Higher Education in California was appointed in July 1959 and met for the first time on August 3, 1959. During the period between August 3 and January 15, 1960, it held ten meetings. The Chairman of the Committee maintained a headquarters office in University Hall at the University of California in Berkeley during a major portion of this period. Committee members met there occasionally to discuss project problems and to work on assignments to subcommittees. Most of the work, however, was done by the members themselves with the help of such staff associates as were available to them within their own institutions.

Since the Committee on Costs was dependent upon the findings and recommendations of several of the other committees, most particularly the Committee on Enrollment Projections and the Committee on Institutional Capacities and Area Needs, it could undertake no substantial analysis of its basic problems until relatively late in the period of study. Only in November and December did essential data begin to become available. In December, after two preliminary reports of the Committee had been submitted to the Master Plan Survey Team, adjustments and changes were made in enrollment projections, sizes and location of recommended new institutions, and similar fundamental data that required major changes and extensive revisions of the Committee's earlier projections and estimates.

The draft of the final report was prepared and duplicated at Fresno State College by the Chairman of the Committee. His secretary, Patricia Collins, served as Secretary to the Committee and supervised final preparation of this report.

This report is the result of committee effort. It was produced on short notice within a brief period of time. No special appropriation to support it was made. With the exception of travel expense for Committee members not employed by the State, no funds other than institutional resources available to the Committee members themselves, were provided for the project. Limitations of the report resulting from pressures of time and inadequacies in available data will become apparent to any careful student of college and university administration.

Several persons assisted with the work, notably the following: David E. Egan, Legislative Analyst's Office, Sacramento; Wesley F. Hall, Controller's Office, University of California, Berkeley; Duncan I. McFadden and Robert Houghton, Controller's Office, Stanford University; Orrin D. Wardle, Phyllis Watts, Mrs. Rose Shamlin, and Mrs. Joan Trueblood, Fresno State College. To all these persons the Committee extends sincere appreciation.

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Section I

PURPOSES, BACKGROUND, AND EXPLANATION OF THE STUDY

The California State Legislature for the fiscal year 1959-60 appropriated a total of approximately $239,000,000 for public higher education, including current expenditures, capital outlays, and funds for salary increases, divided roughly as follows: the University of California, $121,000,000; the state colleges, $91,000,000; and State aid to junior colleges, $27,000,000. This is approximately 11 per cent of the total State budget, which exceeds $2,100,000,000, and a greater amount than is spent by any other state in the nation for public higher education. Total expenditures for all higher education in California, including federal, state and local school district funds used to support junior colleges, together with the expenditures of the University of California, the fourteen state colleges, and the seventy or more independent colleges and universities, exceed $600,000,000 annually. Higher education involves significant expenditures!

The rapid growth of the State's population and the sharp increase in proportion of children of school age, with still larger numbers of youth destined to attend public colleges and universities in the years ahead, pose a very difficult financial problem for the State government. Because of these facts and for other reasons noted later in this report, the Legislature in April 1959 enacted Assembly Concurrent Resolution No. 88, introduced by Assemblymen Dorothy Donahoe and John Williamson, both of Kern County.

This Resolution requested the Liaison Committee of the State Board of Education and The Regents of the University of California

> . . . to prepare a Master Plan for the development, expansion, and integration of the facilities, curriculum, and standards of higher education in junior colleges, state colleges, the University of California, and other institutions of

higher education in the State, to meet the needs of the State during the next ten years and thereafter; and . . . to report on the subject of this Resolution to the Legislature at its 1960 Regular Session within three days of the convening thereof.

The Liaison Committee met on June 3, 1959, and made recommendations, subsequently approved by both Boards, for a specific organizational plan for such a study. The plan and recommendations included provisions that the Liaison Committee itself should be responsible for directing the basic study and that a committee to conduct a Master Plan Study should be constituted as follows. a chairman, agreed to by the State Superintendent of Public Instruction and the President of the University; a representative of the state colleges, nominated by the Superintendent of Public Instruction and approved by the State Board of Education; a representative of the University of California, nominated by the President of the University and approved by The Regents; a representative of the junior colleges, selected by joint agreement of the State Department of Public Instruction and the President of the University from a panel of three nominated by the California Junior College Association; and three members of the Joint Staff of the Liaison Committee for a total of seven members. Subsequently, the Liaison Committee agreed to a proposal that a representative of the independent colleges be named to the study committee as an eighth member. The plan also provided that the Joint Advisory Committee to the Liaison Committee should serve in an advisory capacity to the Superintendent of Public Instruction, the President of the University, and the Joint Staff of the Liaison Committee, but should not be eligible to serve on the study committee.

The Liaison Committee appointed the membership of the Master Plan Survey Team in July 1959 and shortly thereafter named six additional committees to conduct technical studies, including the Committee that prepared this report. In adopting the organizational plan, the Liaison Committee, on recommendation of the Joint Advisory Committee, set forth the major topics to be included in each technical study and outlined some of the significant questions and problems the study should undertake to investigate.

Relationship to *A Restudy of the Needs of California in Higher Education, 1955*

Although nothing in the Assembly Concurrent Resolution indicates that any relationship should exist between this study and the previous *Restudy*,[1] which was published in 1955 and based on data for 1953-54, this particular survey is regarded to be, in effect, a "Restudy of the *Restudy*." Although it repeats certain parts of that investigation, it attempts to go much farther in projecting and predicting costs of higher education in the years ahead. It deals principally with data for the year 1957-58. However, the current study has necessarily been limited to readily available information since the time, staff, and funds available for preparation of this report were only a small fraction of those available to the *Restudy*.

---

[1] T. R. McConnell, T. C. Holy, and H. H. Semans, *A Restudy of the Needs of California in Higher Education*. Sacramento, California State Department of Education, 1955.

One of a series of six reports produced by the Technical Committees under the general direction of the Master Plan Survey Team, this study is designed to present basic data on costs of higher education in California and to develop estimates of those costs over the period 1960-1975.

The purposes of the study are as follows:

1. To determine and analyze expenditures for costs of higher education in California in 1957-58 for the several types of institutions, totally and on several unit bases, and to determine and analyze the historical trends for the past decade.
2. To analyze selected 1957-58 "unit costs" of higher education, both operating costs and capital outlays, by type of public institution, by level of instruction, and by academic level of student.
3. To estimate the probable costs of constructing new institutions or expanding existing institutions of higher education of various types and sizes to meet the predicted growth of the State in accordance with various proposed programs of expansion.
4. To estimate State expenditures for support of higher education during the period between 1960 and 1975, for current operation and for capital outlay, totally and by types of institutions, both public and private.
5. Generally, to present factual information about expenditures and costs of higher education in the State for use in planning the future developments of higher education in California for the period 1960 to 1975.

Dependence of Costs Projections on Variable Factors in State Policy

Any estimates of the cost of State government in the years ahead are obviously dependent on many variable factors, such as population growth, trends of migration, and economic conditions. For predictive purposes, therefore, it is necessary to make a number of fundamental assumptions. State fiscal policy and the trend of the economic and social conditions in the future will need to be prognosticated. The validity of the predictions and the accuracy of estimates of the costs of higher education inevitably will depend upon the degree to which certain "educated guesses" prove to be sound. Among the more important of these variable factors, cited principally to illustrate the problem, are the following:

Nature and Change of College Enrollments in California. This analysis is based on the assumption that the college enrollments in California will increase as projected by the Technical Committee on Enrollment Projections.[2] That study is based on current trends. Taking into account both the nature and rate of enrollment changes in California, it contains the best predictions available and, for the next decade at least, undoubtedly charts enrollment changes as accurately as possible. However, such data are elusive; if significant changes take place in those trends, the estimates will be inaccurate. Numerous factors are involved, such as migration to the State and general economic conditions. A major recession would probably affect the estimates.

Distribution of Students Among California's Institutions of Higher Education. In the fall of 1958, excluding extension classes, a total of

---

[2] Report of the Technical Committee on Enrollment Projections, (a companion study as yet not published).

TABLE I

ENROLLMENT IN CALIFORNIA INSTITUTIONS OF HIGHER EDUCATION BY TYPE OF INSTITUTION AND BY ACADEMIC LEVELS OF STUDENTS, FALL 1958

Academic Level of Students	Total Number of Students	Public Junior Colleges	State Colleges	University of California	Independent Colleges and Universities
Lower Division	197,274	137,700	22,170	14,030	23,314
Full-time only	144,080	89,206	20,052	14,030	20,792
Upper Division	61,378	......	26,047	16,149	19,182
Full-time only	55,024	......	21,701	16,149	17,174
Graduate	31,011	......	4,272	12,922	13,817
Full-time only	22,246	......	2,681	12,922	6,643
Special and Limited	46,519	10,228	27,602	442	8,247
Full-time only	4,265	1,956	94	......	2,214
All Students	336,186	147,928	80,091	43,543	64,620
Full-time only	225,615	91,162	44,528	43,101	46,824

SOURCE: Report of Technical Committee on Enrollment Projections. Table TC2.

336,186 students were enrolled in all institutions of higher education in California. Approximately 44 per cent were enrolled in public junior colleges, 24 per cent in the state colleges, 13 per cent in the University of California, and 19 per cent in independent colleges and universities. Of that total, 225,615 were full-time students, of whom approximately 40 per cent were in the public junior colleges, 20 per cent in the state colleges, 19 per cent in the University of California, and 21 per cent in the independent institutions. Table 1 shows the distribution of students by segments of higher education and by academic levels of students. Table 2 shows the corresponding percentage distributions of the students of each academic level among the four segments of higher education in California.

Approximately 59 per cent of the total students were lower-division students, 18 per cent were upper-division students, 9 per cent were graduate students, and 14 per cent were special and limited undergraduates not classified as to academic level. Of the full-time students, approximately 64 per cent were lower-division students, 24 per cent

TABLE 2

PERCENTAGE DISTRIBUTION OF STUDENTS AMONG INSTITUTIONS, FALL 1958

Academic Level of Students	Total Number of Students	Percentage Distribution of Each Total Number			
		Public Junior Colleges	State Colleges	University of California	Independent Colleges and Universities
Lower Division	197,274	70%	11%	7%	12%
Full-time only	144,080	62	14	10	14
Upper Division	61,378	....	43	26	31
Full-time only	55,024	....	40	29	31
Graduate	31,011	....	14	42	44
Full-time only	22,246	....	12	58	30
Special and Limited[1]	46,523	22	59	1	18
Full-time only	4,265	46	2	....	52
All Students	336,186	44	24	13	19
Full-time only	225,615	40	20	19	21

[1] Undergraduate students not classified as to academic level; includes adults enrolled in regular on-campus classes but does not include extension classes.

SOURCE: Report of Technical Committee on Enrollment Projections.

were upper-division students, 10 per cent were graduate students, and 2 per cent were special and limited undergraduates. Table 3 shows the corresponding percentage distributions within each group of institutions.

Level of Admission Requirements. Higher education in California at the present time is readily available to a vast majority of high school graduates. Any California high school graduate may be admitted to a public junior college. At least 75 per cent of such graduates now live within a junior college district. If a high school graduate elects to attend a junior college and is successful in a university-parallel program or in a program designed to meet upper-division requirements in a state college, he may transfer to a state college, to the University of California, or to one of a number of independent institutions.

Each of the three segments of the system of public higher education has its individual and different standards for freshman admission. Approximately 45 per cent of all high school graduates of California

TABLE 3

PERCENTAGE DISTRIBUTION OF STUDENTS WITHIN INSTITUTIONS, FALL 1958

Type of Institution	Total Number of Students	Percentage Distribution of Each Total Number			
		Lower Division	Upper Division	Graduate	Special and Limited[1]
Public Junior Colleges	147,928	93%	....	....	7%
Full-time only	91,162	98	....	....	2
State Colleges	80,091	28	33%	5%	34
Full-time only	44,528	45	49	6	0.2
University of California	43,547	32	37	30	1
Full-time only	43,101	33	37	30	....
Independent Colleges and Universities	64,620	36	30	21	13
Full-time only	46,824	44	37	14	5
All Institutions	336,186	59	18	9	14
Full-time only	225,615	64	24	10	2

[1] Undergraduate students not classified as to academic level; includes adults enrolled in regular on-campus classes but does not include extension classes.

SOURCE: Report of Technical Committee on Enrollment Projections.

high schools are presently eligible to enter state colleges on graduation from high school. Some 15 per cent, on the average, qualify for admission to the University of California. Admission requirements vary among the independent colleges and universities. If any of these admission requirements are modified, the projections will become correspondingly invalid.

Number and Distribution of New State College or University Campuses. Studies have consistently shown that all public and private colleges and universities tend to be regional institutions. Even the Berkeley and Los Angeles campuses of the University of California, where admission standards are high, draw a relatively large proportion of their students from their immediate vicinity.

Whenever any new campus is established, whether junior college, state college, or university, relatively more high school graduates from that area go on to college. Thus, the establishment of a new college campus tends not only to divide the current total enrollment but also to increase the absolute numbers of youth who go on to college. The type of new institution established will influence the number of youth to be served by the particular institution. All these variable factors make predictions of enrollment very difficult.

A striking case in point is the newly created San Fernando Valley State College. This institution acquired legal status as a separate new institution on July 1, 1958. It had been originally established in its location at the north end of the San Fernando Valley within the City of Northridge in 1956 as a branch of the Los Angeles State College of Applied Arts and Sciences. In its first year of existence as a separate institution and before its first permanent building had been completed, its enrollment exceeded 3,500. In the fall semester of 1959-60, over 4,600 students (regular and limited) enrolled. To be sure, this particular institution, located in a residential area within Los Angeles County, serves a population of roughly one million people. The effect on the junior colleges and other colleges and universities in the Los Angeles area is difficult to assess, but there is no indication that the total enrollment of all the other institutions has been reduced by a figure comparable to San Fernando's enrollment. This same phenomenon, in lesser degree, is repeated whenever any new institution comes into existence.

Extent of Expansion by Independent Colleges. The independent colleges and universities of the State carry a substantial proportion of the load of higher education. In the fall of 1958, they enrolled approximately one-fifth of all college students. Their expenditures represented about 25 per cent of the total in the State for higher education in 1957-58. Any increase in the number of independent colleges or any change of programs in presently existing institutions will tend to modify the State's responsibility.

Proportion of the Cost Borne by the Student. Traditionally, all public institutions of higher education in California have been virtually free to residents of the State. While both the state colleges and the University have assessed so-called "incidental fees" to cover certain costs such as student health service, the amounts of money collected have been relatively small when compared with total expenditures. Unquestionably one reason why the State educates a large proportion of its youth is that higher education has been made not only relatively free but also readily available. Any appreciable increase in the tuition for higher education—and, most particularly, for *public* higher education—will tend to reduce enrollments.

Dynamic Nature of Policy Making: Difficulties in Establishing Firm Programs

However valid are the several assumptions adopted by this Committee and however reliable are the basic data used, the changing nature of our society constantly places new and unforeseen demands upon the colleges and universities of the State, thereby making predictions difficult. Just as the development of atomic energy and its implications for university research were largely unforeseen in 1941, so, conceivably, ten years hence may some new and unprecedented discovery of the Space Age further alter the demands placed upon the institutions of higher learning. But this report takes none of these possibilities into consideration.

Another intangible factor, certainly more important from a practical standpoint, is the possibility of some major shift in the nature or attitudes of policy-making agencies within the State government. The decisions of the State Legislature may be conditioned by economic factors. Usually public education feels the pinch relatively early in any program of curtailment. If the present favorable economic situation continues through the 1960's, undoubtedly higher education will expand rapidly.

Policy for public higher education is made not only by statutory legislation but also by regulations established by appointed boards such as local boards and voters for the junior colleges, the State Board of Education for the state colleges, and the Board of Regents for the University. Changes in the membership of these boards frequently affect the programs and developments within the institutions. A significant change in the organization or the method of selection of the membership of the State Board of Education could conceivably affect policies to an extent that certain of the major assumptions of this study would become completely invalid. The findings of this study are only as accurate as the assumptions and data upon which they are based.

The Committee's Program and Procedure

This project and report were both produced on short notice in a limited period by persons drawn from regular assignments within higher education in the State. No special legislative appropriation was provided. Committee members were appointed in July 1959, held their first meeting in August, and prepared much of the material for this report in September, October, and November 1959. Preliminary reports were submitted to the Master Plan Survey Team on November 2 and November 16 and to the Liaison Committee on November 18 and December 8. Completion of this final report, however, had to await not only the other Technical Committee reports but also the Report of the Master Plan Survey Team. Staff assistance was drawn almost entirely from the institutions represented on the Committee, and, in most cases, from their own offices. Much of the research and all the writing was done by the Committee members themselves.

Sources of the Data

The data used in the report were drawn from official sources and special reports from the institutions and agencies concerned. Facts about expenditures and sources of funds were taken from official reports of the State Department of Finance, The Regents of the University of California, the State Department of Education, local school districts, and the independent institutions. Information on students, data on buildings, and other similar matters were obtained from the institutions. While some of the facts have been assembled hurriedly, the data are as valid and accurate as possible. Such shortcomings as may become apparent are, in part, a result of the haste with which the data had to be assembled and treated.

Definitions and Categories Used

Throughout this report the terms "college" and "higher education" are used in their generic sense.

To differentiate clearly among technical accounting terms and to explain what each financial category includes, the following definitions are set forth. As used in this report, current expenditures are *the costs incurred for services purchased and materials consumed in the conduct of the activities of an institution during a stated period.* Capital expenditures (or outlays) are *costs of acquiring capital assets—land, buildings, and equipment used to carry on the activities of an institution.* No share of capital outlay has been allocated to current expenditures as is sometimes done to arrive at so-called "capital operating costs."

The functions and activities covered by current expenditures of an institution fall under three main categories for purposes of this report:

1. Educational and General
    - a. Institutional instruction
        - (1) General administration
        - (2) Student services
        - (3) Staff benefits
        - (4) General institutional services
        - (5) Instruction and departmental research
        - (6) Libraries
        - (7) Maintenance and operation of plant

    - b. Related instructional activities
        - (1) Summer sessions
        - (2) Extension and public service
        - (3) Organized research
        - (4) Organized activities of instructional departments

2. Auxiliary Enterprises
    - a. Residence halls
    - b. Cafeteria
    - c. Bookstore
    - d. Student union
    - e. Intercollegiate athletics
    - f. Faculty housing

3. Student Aid
    - a. Scholarships
    - b. Prizes
    - c. Fellowships

Organization of the Report

This report is divided into five sections.

Section I outlines the purposes of the study, describes the Committee's assignment, and generally sets forth the nature and organization of the report and the conditions under which it was prepared.

Section II presents the amounts expended for higher education in California for the years 1948-49 through 1957-58 at all levels of instruction and for all institutions. A series of tables presents the amounts expended for higher education by the junior colleges, the state colleges, the University, and the independent institutions. This section also shows the historical trends of expenditures for higher education in California in the decade 1948-49 through 1957-58 and sets forth certain facts with respect to expenditures within the several segments of higher education. This section of the report should give the reader a clear picture of the fiscal situation as it existed in 1957-58 and as it developed over the previous decade.

Section III presents an analysis of the operating expenses of each group of public institutions, by types and sizes of institutions and by levels of instruction, for the year 1957-58. It is primarily a study of unit costs. It brings up to date, within certain limits, comparable facts presented in Chapter 7 of the *Restudy*, entitled, "An Analysis of Expenses for Educational and General Purposes for 1953-54." Some aspects of the present study, however, are less comprehensive than the *Restudy*, principally because time and available staff and facilities did not permit the more complete analysis that was possible in the earlier report. However, this section indicates the nature and extent of the differences in cost within the several segments of higher education and for the various levels of instruction within the system. It merely comments on such functions as research and on such professional education as the medical and health sciences.

Section IV studies the costs of developing entirely new institutions of higher education and of expanding presently existing colleges and universities. It presents data on expenditures for selected junior college, state college, and university campuses that have been developed within the past decade. It shows the estimated costs of establishing each of these three types of institution, by size. It notes certain variable factors that affect these costs. In terms of the data presented in this section, it develops certain generalizations and predictions or estimates with respect to the probable costs of developing programs of expanded higher education in California along lines recommended by the Committee on Institutional Capacities and Area Needs.

Section V summarizes the total study. Projections of expenditures for higher education between 1960 and 1975, both for current operating expenditures and capital outlays, are set forth. The primary purpose of the last section is to provide the best available estimates of State expenditures that will be required to support public higher education in California during the next fifteen years.

Section II

HISTORICAL TRENDS OF EXPENDITURES FOR HIGHER EDUCATION IN CALIFORNIA

Expenditures for higher education in California have increased steadily for many years, but they have increased at a particularly rapid pace since World War II, largely as the result of sharp growth in the State's population. Although increased enrollments in colleges and universities have obviously been the largest single factor, others have contributed: the general wave of inflation has resulted in higher salaries and higher building costs; educational programs have been extended; demands for relatively more expensive curricula in such fields as science and engineering have increased; and government and industry have demanded more research and a higher level of education in technical fields. These considerations and influences have more than tripled total expenditures for higher education in California in the last decade.

Increases in Population and in Full-Time College Enrollments

The total population of California was approximately 10,064,000 in 1947; in 1957 it was estimated to be 14,752,000,[1] an increase of 47 per cent for the decade under study.

Enrollment data for this particular decade are not readily available; however, the percentage of increase in numbers of college students in the State has more than kept pace with the percentage of increase in general population. The period of sharpest enrollment increase came during the second half of the decade, beginning in the fall of 1953. That year, incidentally, was the year upon which statistical data in the *Restudy* were based. According to that study, the *full-time* enrollment in publicly controlled institutions of higher education in the fall of 1953 was 106,700, divided as follows: public junior colleges, 48,700; state colleges, 25,300; University of California, 32,700.[2]

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[1] *California's Population in 1959.* Sacramento, California State Department of Finance, August 1959, pp. 3-4.

In the fall of 1958 the corresponding *full-time* enrollments totaled 178,791 in publicly controlled institutions, divided as follows: public junior colleges, 91,162; state colleges, 44,528; University of California, 43,101.[3] Thus, the increase in full-time enrollment for the five-year period from 1953 to 1958 was approximately 67 per cent. (It is interesting to observe that the prediction for 1958 in the *Restudy* was 147,900, which is about 30,000—or 29 per cent—too low.[4])

The *Restudy* did not contain a specific full-time enrollment figure for the privately controlled, or independent, colleges and universities. Rather, because of incomplete data, it presented three estimates, as follows: "low," 40,500; "medium," 41,500; and "high," 42,600. Assuming the "medium" estimate for that year, the total full-time enrollment of California's publicly and privately controlled institutions of higher education in the fall of 1953 was 148,200.[5] In the fall of 1958 it was 225,615.[6] Thus, including the independent institutions, the increase in enrollments for the five-year period from 1953 to 1958 was 52 per cent. Full-time enrollment in independent colleges and universities increased relatively little, from 41,500 to 44,378, or about 7 per cent, during this period, according to these data.

Table 1, in Section I of this report, provides the data on enrollments, abstracted from the Report on Enrollment Projections, that were used in this study. Table 2 and Table 3 in Section I present a percentage distribution *among* and *within* the institutions, respectively.

Expenditures for Higher Education in California, 1948-49 to 1957-58

The fiscal year 1957-58 is the last year for which complete and accurate data on expenditures for higher education in California were available. For that reason the ten-year period 1948-49 through 1957-58 was chosen for study. Tables 4 through 9, which follow, present data on total expenditures for higher education in California, irrespective of sources of funds.

Table 4 shows an over-all picture of total expenditures within the

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[2] McConnell, Holy, and Semans, *op. cit.*, p. 20.

[3] *Summary of First Run Status-Quo Projections.* Technical Committee on Enrollment Projections, September 24, 1959.

[4] McConnell, Holy, and Semans, *loc. cit.*

[5] McConnell, Holy, and Semans, *op. cit.*, p. 19.

[6] Technical Committee on Enrollment Projections, *op. cit.*

State for the ten-year period; Table 5 presents these expenditures for all public institutions; and Tables 6 through 9 show the expenditures of each group of institutions: public junior colleges, state colleges, the University, and independent institutions. These tables show the percentage increase of each classification of expenditure for the year 1957-58, the last year for which full data were available, compared to the year 1948-49. Also shown are the percentage increases of 1957-58 over 1953-54, the year analyzed in *Restudy*. Comments on these tables follow.

Table 10 shows expenditures of State funds over the ten-year period for both current expenditures and capital outlay. For comparison, total current expenditures and capital outlay are repeated to show the proportion covered by State appropriation. Comments on the trends of expenditures of State funds by these types of institutions follow.

Sources of Expenditure Data. Expenditure data were secured from published reports of the State and of the various institutions. The Committee added State Employees' Retirement Service costs to the direct expenditures of public institutions. Also, in the case of public institutions, appropriate State costs, such as those of the Departments of Finance and Education, are included. In the case of independent institutions, expenditures are based upon reports from institutions with 77 per cent of the total independent institution enrollment in the State, and the figures shown in this report are the reported amounts adjusted in proportion to the total enrollment of all such institutions. Thus, some of the expenditure data published by this Committee are necessarily based upon informed estimates because complete statistics were not available.

An attempt to present an analysis of expenditures in terms of the classification system in Table 52 of the *Restudy* was abandoned because the Committee encountered difficulties that could not be overcome within the time allowed. Chief among these difficulties was the noncomparability of accounting nomenclature at the different types of institutions. Because of the different methods and classification systems used in accounting for expenditures, even identical terminology in the classifications of expenditures of the different groups of institutions does not mean expenditures for exactly comparable functions and activities.

Explanation of Expenditure Classification. Table 51 of the *Restudy* classifies "Current Expenditures" into "Education and General," "Auxiliary and Service Enterprises," "Student Aid," and "Other." This report follows the same classification with two exceptions:

1. Since the classification "Other" is almost insignificant in amount, it has been added to "Educational and General."

2. "Education and General" is here divided into two classifications because in itself it comprises over 80 per cent of total current expenditures.

Although the expenses of "Organized Activities and Organized Research" are clearly within the classification of "Educational and General," their expense is usually greater in proportion to the number of students benefited than is the cost incurred in other fields of teaching. More particularly, the largely self-supporting expenditures should be separately identified in a study showing educational costs that will have to be met largely from public funds.

However, at the University a considerable proportion of the expenditure for organized research, excluding the three major Atomic Energy Commission research projects, is met from State appropriation.

In this section of the report the costs of summer session, extension, and public service are included in the classification "Institutional Instruction and Research," while in Section III these expenditures are included with "Organized Activities and Organized Research," in the category entitled "Related Teaching and Research."

Expenditures of All Institutions. Table 4 shows annual total expenditures, current expenditures by classification, and capital outlay of all institutions of higher education in California for the years 1948-49 through 1957-58. Reference to this table shows that during the ten-year period total expenditures increased from $179,916,000 to $553,832,000, or 208 per cent; current expenditures increased from $147,465,000 to $389,461,000, or 164 per cent; and capital outlay increased from $32,451,000 to $164,371,000, or 407 per cent.

Total expenditures during the entire decade increased every year except in 1951-52. Current expenditures increased every year. Capital outlay fluctuated from year to year but increased nearly threefold for the first nine years and took a decided jump in 1957-58.

Educational and general expenditures, by far the greatest part of current expenditures, increased 183 per cent during the period. Auxiliary and service enterprises expenditures increased only 64 per cent. Student aid expenditures, a small amount in comparison, increased 317 per cent.

Institutional instruction and research expenditures increased during this period from $100,222,000 to $272,584,000, or 172 per cent. Organized activities and organized research expenditures increased from $19,965,000 to $67,518,000, or 238 per cent.

TABLE 4

EXPENDITURES OF ALL INSTITUTIONS OF HIGHER EDUCATION IN CALIFORNIA, 1948-49 THROUGH 1957-58

(In thousands of dollars)

Fiscal Year	Current Expenditures						Capital Outlay	Total
	Educational and General			Auxiliary and Service Enterprises	Student Aid	Total		
	Institutional Instruction and Research	Organized Activities and Organized Research	Total					
1957-58	$272,584	$67,518	$340,102	$41,823	$7,536	$389,461	$164,371	$553,832
1956-57	233,047	58,702	291,749	38,547	6,237	336,533	90,154	426,687
1955-56	201,679	49,348	251,027	34,734	4.950	290,711	61,468	352,179
1954-55	181,062	40,215	221,277	29,787	4,179	255,243	68,240	323.483
1953-54	164,023	37,208	201,231	28,055	3,759	233,045	64,954	297,999
1952-53	145,038	33,262	178,300	26,481	3,304	208,085	57,490	265,575
1951-52	130,309	29,958	160,267	26,583	2,655	189,505	51,055	240,560
1950-51	125,405	24,976	150,381	26,076	2,300	178,757	66,947	245,704
1949-50	114,730	21,670	136,400	25,951	2,045	164,396	46,440	210,836
1948-49	100,222	19,965	120,187	25,471	1,807	147,465	32,451	179,916
Percentage Increase:								
1957-58 over 1948-49	172.0%	238.2%	183.0%	64.2%	317.0%	164.1%	406.5%	207.8%
1957-58 over 1953-54	66.2	81.5	69.0	49.1	100.5	67.1	153.1	85.9

TABLE 5

EXPENDITURES OF PUBLIC INSTITUTIONS OF HIGHER EDUCATION IN CALIFORNIA, 1948-49 THROUGH 1957-58

(In thousands of dollars)

Fiscal Year	Current Expenditures						Capital Outlay	Total
	Educational and General			Auxiliary and Service Enterprises	Student Aid	Total		
	Institutional Instruction and Research	Organized Activities and Organized Research	Total					
1957-58	$208,736	$50,511	$259,247	$15,552	$1,780	$276,579	$136,647	$413,226
1956-57	175,951	43,955	219,906	13,951	1,358	235,215	71,320	306,535
1955-56	151,395	36,913	188,308	12,581	921	201,810	44 685	246,495
1954-55	135,466	28,630	164,096	9,888	778	174,762	52,958	227,720
1953-54	121,874	25,800	147,674	9,066	674	157,414	57,515	214,929
1952-53	106,511	23,780	130,291	8,964	634	139,889	50,302	190,191
1951-52	93,457	20,962	114,419	8,689	499	123,607	39,274	162,881
1950-51	88,302	17,546	105,848	8,719	478	115,045	59,041	174,086
1949-50	78,596	15,465	94,061	8,711	436	103,208	36,920	140,128
1948-49	66,328	14,220	80,548	8,329	394	89,271	23,506	112,777
Percentage Increase:								
1957-58 over 1948-49	214.7%	255.2%	221.9%	86.7%	351.8%	209.8%	481.3%	266.4%
1957-58 over 1953-54	71.3	95.8	75.6	71.5	164.1	75.7	137.6	92.3

Expenditures of Public Institutions. Table 5 shows expenditures of public institutions of higher education in California for the years 1948-49 through 1957-58. Reference to this table shows that during the ten-year period total expenditures increased from $112,777,000 to $413,226,000, or 266 per cent; current expenditures increased from $89,271,000 to $276,579,000, or 210 per cent; and capital outlay increased from $23,506,000 to $136,647,000, or 481 per cent.

Total expenditures during the entire decade—like total expenditures of all institutions—increased every year except in 1951-52. Current expenditures increased every year. Capital outlay fluctuated from year to year with the greatest increase in 1957-58, to nearly six times the figure for 1948-49.

Educational and general expenditures increased during this period from $80,548,000 to $259,247,000, or 222 per cent. Auxiliary and service enterprises expenditures increased from $8,329,000 to $15,552,000, not quite doubling. Student aid expenditures, proportionately a smaller amount in public institutions than in independent institutions, increased to $1,780,000, or 352 per cent.

Institutional instruction and research expenditures increased during this period from $66,328,000 to $208,736,000, or 215 per cent. Organized activities and organized research expenditures—primarily that of the University of California—increased from $14,220,000 to $50,511,000, or 255 per cent.

Expenditures of Junior Colleges. Table 6 shows expenditures of junior colleges in California for the years 1948-49 through 1957-58. Reference to this table shows that during the ten-year period total expenditures increased from $30,671,000 to $103,259,000, or 237 per cent; current expenditures increased from $24,235,000 to $77,035,000, or 218 per cent; and capital outlay increased from $6,436,000 to $26,224,000, or 308 per cent.

Current expenditures during the entire decade increased every year. Capital outlay fluctuated from year to year and decreased in three of the ten years from the previous year.

Educational and general expenditures of junior colleges comprise substantially the whole of junior college current expenditures; the percentage increase during the period, therefore, was the same for both. Auxiliary and service enterprises expenditures averaged about one-half of 1 per cent of current expenditures and increased 178 per cent. Consistent with the *Restudy* year of 1953-54, no student aid expenditures were recorded for junior colleges.

Of the four types of institutions, only junior colleges show no organized activities and organized research expenditures; consequently,

TABLE 6

Expenditures of Public Junior Colleges in California, 1948-49 Through 1957-58

(In thousands of dollars)

Fiscal Year	Current Expenditures						Capital Outlay	Total
	Educational and General			Auxiliary and Service Enterprises	Student Aid	Total		
	Institutional Instruction and Research	Organized Activities and Organized Research	Total					
1957-58	$76,607	....	$76,607	$428	....	$77,035	$26,224	$103,259
1956-57	66,309	....	66,309	366	....	66,675	19,750	86,425
1955-56	56,261	....	56,261	582	....	56,843	11,831	68,674
1954-55	49,573	....	49,573	587	....	50,160	15,753	65,913
1953-54	43,817	....	43,817	497	....	44,314	20,241	64,555
1952-53	37,623	....	37,623	452	....	38,075	16,027	54,102
1951-52	34,950	....	34,950	278	....	35,228	12,859	48,087
1950-51	34,602	....	34,602	286	....	34,888	19,662	54,550
1949-50	29,581	....	29,581	243	....	29,824	15,823	45,647
1948-49	24,081	....	24,081	154	....	24,235	6,436	30,671
Percentage Increase:								
1957-58 over 1948-49	218.1%	....	218.1%	177.9%	....	217.9%	307.5%	236.7%
1957-58 over 1953-54	74.8	....	74.8	(13.9)	....	73.8	29.6	60.0

educational and general expenditures can be considered comparable to the institutional instruction and research expenditures of the other types of institutions.

Expenditures of State Colleges. Table 7 shows expenditures of state colleges in California for the years 1948-49 through 1957-58. Reference to this table shows that during the ten-year period total expenditures increased from $17,097,000 to $136,529,000, or 699 per cent; current expenditures increased from $12,231,000 to $54,461,000, or 345 per cent; and capital outlay increased from $4,866,000 to $82,068,000, or 1,587 per cent.

Current expenditures during the entire decade increased every year and show a higher rate of increase for the period than do the current expenditures of any of the other types of institutions. Fluctuations in capital outlay expenditures were greater for state colleges than for any other type of institution, showing in 1950-51 a peak of $22,000,000, which was not equaled in amount for the following five years. In 1956-57 capital outlay reached $34,000,000—a high at that time but eclipsed in the next year by capital outlay of $82,000,000, which was the highest figure for capital outlay of any type of institution within the ten-year period.

Educational and general expenditures increased during this period from $10,058,000 to $48,564,000, or 383 per cent. Auxiliary and service enterprises expenditures, comprising a relatively small proportion of state colleges' current expenditures, increased 172 per cent.

Institutional instruction and research expenditures, the greater part of educational and general expenditures, increased during this period from $9,722,000 to $47,680,000, or 390 per cent. The 163 per cent increase in organized activities and organized research expenditures still brought the yearly expenditure to less than $1,000,000.

Expenditures of the University of California. Table 8 shows expenditures of the University of California for the years 1948-49 through 1957-58, excluding the three major Atomic Energy Commission contracts. Reference to this table shows that during the ten-year period total expenditures increased from $65,009,000 to $173,438,000, or 167 per cent; current expenditures increased from $52,805,000 to $145,083,000, or 175 per cent; and capital outlay increased from $12,204,000 to $28,355,000, or 132 per cent.

Current expenditures during the entire decade increased every year and were greater in each year than the total current expenditures of junior colleges and state colleges combined. Over the ten-year period the University's rate of increase was 174 per cent—less, however, than

TABLE 7

Expenditures of State Colleges in California, 1948-49 Through 1957-58

(In thousands of dollars)

Fiscal Year	Current Expenditures						Capital Outlay	Total
	Educational and General			Auxiliary and Service Enterprises	Student Aid	Total		
	Institutional Instruction and Research	Organized Activities and Organized Research	Total					
1957-58	$47,680	$884	$48,564	$5,897	....	$54,461	$82,068	$136,529
1956-57	38,144	771	38,915	5,025	....	43,940	34,347	78,287
1955-56	30,377	667	31,044	4,204	....	35,248	17,781	53,029
1954-55	25,879	615	26,494	3,513	....	30,007	14,952	44,959
1953-54	22,508	574	23,082	2,889	....	25,971	8,692	34,663
1952-53	18,581	508	19,089	2,733	....	21,822	8,430	30,252
1951-52	15,435	450	15,885	2,463	....	18,348	7,456	25,804
1950-51	13,834	428	14,262	2,519	....	16,781	22,009	38,790
1949-50	11,983	392	12,375	2,502	....	14,877	9,136	24,013
1948-49	9,722	336	10,058	2,173	....	12,231	4,866	17,097
Percentage Increase:								
1957-58 over 1948-49	390.4%	163.1%	382.8%	171.4%	....	345.3%	1,586.6%	698.6%
1957-58 over 1953-54	111.8	54.0	110.4	104.1	....	109.7	844.2	293.9

TABLE 8

EXPENDITURES OF THE UNIVERSITY OF CALIFORNIA, 1948-49 THROUGH 1957-58
(In thousands of dollars)

Fiscal Year	Current Expenditures						Capital Outlay	Total
	Educational and General			Auxiliary and Service Enterprises	Student Aid	Total		
	Institutional Instruction and Research	Organized Activities and Organized Research	Total					
1957-58	$84,449	$49,627	$134,076	$9,227	$1,780	$145,082	$28,355	$173,438
1956-57	71,498	43,184	114,682	8,560	1,358	124,600	17,223	141,823
1955-56	64,757	36,246	101,003	7,795	921	109,719	15,073	124,792
1954-55	60,014	28,015	88,029	5,788	778	94,595	22,253	116,848
1953-54	55,549	25,226	80,775	5,680	674	87,129	28,582	115,711
1952-53	50,307	23,272	73,579	5,779	634	79,992	25,845	105,837
1951-52	43,072	20,512	63,584	5,948	499	70,031	18,959	88,990
1950-51	39,866	17,118	56,984	5,914	478	63,376	17,370	80,746
1949-50	37,032	15,073	52,105	5,966	436	58,507	11,961	70,468
1948-49	32,525	13,884	46,409	6,002	394	52,805	12,204	65,009
Percentage Increase:								
1957-58 over 1948-49	159.6%	257.4%	188.9%	53.7%	351.8%	174.8%	132.3%	166.8%
1957-58 over 1953-54	52.0	96.7	66.0	62.4	164.1	66.5	(.8)	49.9

the junior colleges' 218 per cent and considerably less than the state colleges' 345 per cent. Capital outlay, while more than doubling between 1948-49 and 1957-58, was slightly less in 1957-58 than in 1953-54, the highest year of the period.

Educational and general expenditures increased during this period from $46,409,000 to $134,076,000, or 189 per cent. Auxiliary and service enterprises expenditures increased from $6,002,000 to $9,227,000, or only 54 per cent. Student aid expenditures increased from $394,000 to $1,780,000, or 352 per cent.

Institutional instruction and research expenditures increased during this period from $32,525,000 to $84,449,000, or 160 per cent. Organized activities and organized research expenditures increased from $13,884,000 to $49,627,000, or 257 per cent, by far the greatest percentage of educational and general expenditures of any of the four groups of institutions—for example, approximately 37 per cent in 1957-58.

Expenditures of Independent Institutions. Table 9 shows expenditures of independent institutions of higher education in California for the years 1948-49 through 1957-58, excluding major off-campus research contracts at the California Institute of Technology. Reference to this table shows that during the ten-year period total expenditures increased from $67,139,000 to $140,606,000, or 109 per cent; current expenditures increased from $58,194,000 to $112,882,000, or 94 per cent; and capital outlay increased from $8,945,000 to $27,724,000, or 210 per cent.

Total expenditures during the entire decade increased 109 per cent, the lowest of the four types of institutions. Current expenditures increased 94 per cent, also the lowest of the four types. Capital outlay increase was emphasized by a jump in 1957-58 of approximately 50 per cent over the next highest year.

Educational and general expenditures increased during this period from $39,639,000 to $80,855,000, or 104 per cent. Auxiliary and service enterprises expenditures were consistently about three times that of the University and increased from $17,142,000 to $26,271,000, or 53 per cent, nearly an identical percentage increase to that of the University. Student aid expenditures were likewise about three times as great in the independent institutions as in the University and increased to $5,756,000, or 307 per cent, compared to the University's increase to $1,780,000, or 352 per cent.

Institutional instruction and research expenditures increased during this period from $33,894,000 to $63,848,000, or only 88 per cent. Expenditures for these purposes, which had been approximately 50 per

TABLE 9

Expenditures of Independent Institutions of Higher Education in California, 1948-49 Through 1957-58

(In thousands of dollars)

Fiscal Year	Current Expenditures						Capital Outlay	Total
	Educational and General			Auxiliary and Service Enterprises	Student Aid	Total		
	Institutional Instruction and Research	Organized Activities and Organized Research	Total					
1957-58	$63,848	$17,007	$80,855	$26,271	$5,756	$112,882	$27,724	$140,606
1956-57	57,096	14,747	71,843	24,596	4,879	101,318	18,834	120,152
1955-56	50,284	12,435	62,719	22,153	4,029	88,901	16,783	105,684
1954-55	45,596	11,585	57,181	19,899	3,401	80,481	15,282	95,763
1953-54	42,149	11,408	53,557	18,989	3,085	75,631	7,439	83,070
1952-53	38,527	9,482	48,009	17,517	2,670	68,196	7,188	75,384
1951-52	36,852	8,996	45,848	17,894	2,156	65,898	11,781	77,679
1950-51	37,103	7,430	44,533	17,357	1,822	63,712	7,906	71,618
1949-50	36,134	6,205	42,339	17,240	1,609	61,188	9,520	70,708
1948-49	33,894	5,745	39,639	17,142	1,413	58,194	8,945	67,139
Percentage Increase:								
1957-58 over 1948-49	88.4%	196.0%	104.0%	53.3%	307.4%	94.0%	209.9%	109.4%
1957-58 over 1953-54	51.5	49.1	51.0	38.3	86.6	49.3	272.7	69.3

cent greater in dollar amount than those of the junior colleges in 1948-49, were $13,000,000 less in 1957-58. Institutional instruction and research expenditures in the state colleges was little more than one-quarter that of the independent institutions in 1948-49, but increased to three-quarters in 1957-58. Organized activities and organized research expenditures of the independent institutions, not quite one-third that of the University (and of which the state colleges had $884,000 in 1957-58 and the junior colleges none), increased from $5,745,000 to $17,007,000, or 196 per cent as compared to the University's increase of 257 per cent during the same period.

Expenditures of State Funds for Higher Education, 1948-49 to 1957-58

Table 10 shows expenditures of State funds for higher education in California for both current expenditures and capital outlay. The data are shown for the three types of public institutions separately and in total. For comparison, corresponding total current expenditures and capital outlay of the institutions show the proportion of expenditures that were met with State funds.

In the case of expenditures of State funds for capital outlay, the expenditures are recorded as of the year in which the funds were expended, not the year in which they were budgeted.

Expenditures of State Funds for All Public Institutions of Higher Education. Table 10 shows that during the ten-year period State funds used for current expenditures in all public institutions increased from $44,004,000 to $154,767,000, or 252 per cent. Such expenditures increased in each of the ten years. During the same period total current expenditures of the public institutions increased from $89,271,000 to $276,579,000, or 210 per cent. Slightly more than half of public institutions' total current expenditures were met with funds provided by the State.

While expenditures of State funds for capital outlay fluctuated from year to year, they increased from $15,039,000 in 1948-49 to $102,412,000 in 1957-58, or 581 per cent for the decade. State funds for capital outlay meet a large portion of the expenditures for capital outlay of the University of California and the entire capital outlay of the state colleges. However, no State appropriation is made for capital outlay for junior colleges; such costs are paid entirely from district funds.

Expenditures of State Funds by Junior Colleges. Table 10 shows that yearly State apportionments for current expenditures to junior colleges increased during the ten-year period from $9,394,000 to

TABLE 10

Expenditures of State Funds and Total Expenditures for Higher Education in California, 1948-49 Through 1957-58[1]

(In thousands of dollars)

Fiscal Year	Junior Colleges	State Colleges	University of California	Total	Junior Colleges	State Colleges	University of California	Total
	Current Expenditures from State Funds				Total Current Expenditures			
1957-58	$22,679	$42,582	$89,506	$154,767	$77,035	$54,461	$145,083	$276,579
1956-57	19,637	33,656	76,739	130,032	66,675	43,940	124,600	235,215
1955-56	18,916	26,504	65,094	110,514	56,843	35,248	109,719	201,810
1954-55	15,342	21,913	60,544	97,799	50,160	30,007	94,595	174,762
1953-54	12,813	17,783	56,597	87,193	44,314	25,971	87,129	157,414
1952-53	10,549	15,806	52,982	79,337	38,075	21,822	79,992	139,889
1951-52	10,412	13,352	46,451	70,215	35,228	18,348	70,031	123,607
1950-51	10,902	11,209	38,768	60,879	34,888	16,781	63,376	115,045
1949-50	9,570	9,111	33,304	51,985	29,824	14,877	58,507	103,208
1948-49	9,394	7,081	27,529	44,004	24,235	12,231	52,805	89,271
Ten-Year Total	$140,214	$198,997	$547,514	$886,725	$457,277	$273,686	$885,837	$1,616,800
	Capital Outlays from State Funds				Total Capital Outlays			
1957-58	....	$82,068	$20,344	$102,412	$26,224	$82,068	$28,355	$136,647
1956-57	....	34,347	12,837	47,184	19,750	34,347	17,223	71,320
1955-56	....	17,781	11,832	29,613	11,831	17,781	15,073	44,685
1954-55	....	14,952	18,672	33,624	15,753	14,952	22,253	52,958
1953-54	....	8,692	23,926	32,618	20,241	8,692	28,582	57,515
1952-53	....	8,430	23,889	32,319	16,027	8,430	25,845	50,302
1951-52	....	7,456	16,460	23,916	12,859	7,456	18,959	39,274
1950-51	....	22,009	15,024	37,033	19,662	22,009	17,370	59,041
1949-50	....	9,136	10,520	19,656	15,823	9,136	11,961	36,920
1948-49	....	4,866	10,173	15,039	6,436	4,866	12,204	23,506
Ten-Year Total	....	$209,737	$163,677	$373,414	$164,606	$209,737	$197,825	$572,168

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[1] Includes State scholarships awarded to students in public institutions. State scholarships awarded to students in independent institutions are not included.

$22,679,000, or 141 per cent. During the same period current expenditures of junior colleges increased from $24,235,000 to $77,035,000, or 218 per cent. For the entire period 31 per cent of the junior colleges' current expenditures was met from State apportionments. As mentioned earlier, capital outlay of junior colleges is entirely from district funds without State appropriations.

Expenditures of State Funds by State Colleges. Expenditures of State funds for current expenditures by state colleges increased during the ten-year period from $7,081,000 to $42,582,000, or 501 per cent. During the same period total current expenditures of state colleges increased from $12,231,000 to $54,461,000, or 345 per cent. For the entire period 73 per cent of state colleges' current expenditures was met from State funds. This percentage increased substantially during the period from 58 per cent in 1948-49 to 78 per cent in 1957-58. Capital outlay of state colleges is paid entirely from State funds.

Expenditures of State Funds by the University of California. Expenditures from State funds for current expenditures by the University of California increased during the ten-year period from $27,529,000 to $89,506,000, or 225 per cent. During the same period total current expenditures of the University increased from $52,805,000 to $145,083,000, or 175 per cent. For the entire period 62 per cent of the University's current expenditures was met from State appropriations. The percentage of State support increased during the first years of the period and decreased during the later ones.

State funds for capital outlay during the ten-year period totaled $163,677,000, as compared to total capital outlay of $197,825,000, or 83 per cent. Similar to the pattern of expenditures of State funds for current expenditures, the percentage of State funds for capital outlay increased during the first years of the period and decreased during the later ones.

Sources of Income—State Colleges and University of California

Tables 11 and 12 present the sources of current income for the state colleges and the University of California for the years 1953-54 and 1957-58. Comparable data for the junior colleges and independent institutions are not available. Comparison of these two tables indicates the state colleges derive a substantially larger proportion of current income from State sources than the University does. Comparison also shows that the state colleges receive an insignificant amount of federal funds, whereas the University obtains over 10 per cent of its current income (exclusive of the three major Atomic Energy Commission projects) from this source. The percentages of student fees are roughly comparable.

Reasonable uniformity in categorization has been achieved in these two tables. This, in fact, is the reason for differences between 1953-54 figures in these tables and in the *Restudy*.

Summary of Trends of Total Expenditures and Expenditures of State Funds

A review of the trends of expenditures for higher education in California for the years 1948-49 through 1957-58 leads to conclusions that may be summarized as follows:

1. Particularly noteworthy was the increase in the yearly level of total expenditures for all institutions from $180,000,000 in 1948-49 to $554,000,000 in 1957-58, an increase of $374,000,000, or 208 per cent, in ten years.

2. The increase in current expenditures of $242,000,000 accounted for nearly two-thirds of the increase. Capital outlay accounted for the balance.

TABLE 11

SOURCES OF CURRENT INCOME, STATE COLLEGES, 1953-54 AND 1957-58

Source	Amount (in thousands)		Per Cent of Total	
	1953-54	1957-58	1953-54	1957-58
Government				
State[1]	$19,783	$42,582	76.0	78.0
Federal	1,085	81	4.2	0.1
Total	$20,868	$42,663	80.2	78.1
Student Fees	2,076	5,567	8.0	10.2
Endowments	......	......	......	......
Donations	......	......	......	......
Sales and Services	202	535	0.8	1.0
Auxiliary and Service Enterprises	2,889	5,897	11.0	10.7
Other	5	......	......	......
Total	$26,040	$54,662	100.0	100.0

[1] Includes State contribution to Employees' Retirement Fund.

3. Institutional instruction and research was the greatest single factor in the current expenditure increase. It accounted for $172,000,000, which was nearly one-half of the increase in all expenditures.

4. The greatest dollar increases in institutional instruction and research were those of the junior colleges and the University. Both had $52,000,000 increases in this classification in the ten-year period. These increases were about a third more than that of the state colleges and almost double that of the independent institutions.

5. Of importance in addition to the dollar increases were the proportionate increases for each type of institution. Institutional instruction and research expenditures of state colleges in 1957-58 were five times the 1948-49 amount. This proportionate increase was nearly double that of the junior colleges, just about double that of the University, and more than double that of the independent institutions.

6. Still within the current expenditures classification, organized activities and organized research increased $48,000,000 in the ten

TABLE 12

SOURCES OF CURRENT INCOME, THE UNIVERSITY OF CALIFORNIA, 1953-54 AND 1957-58

Source	Amount (in thousands)		Per Cent of Total	
	1953-54	1957-58	1953-54	1957-58
Government				
State[1]	$56,650	$89,506	65.1	60.3
Federal[2]	8,847	18,750	10.1	12.6
Total	$65,497	$108,256	75.2	72.9
Student Fees	6,871	11,039	7.9	7.4
Endowments	2,596	3,366	3.0	2.3
Donations	2,345	4,791	2.7	3.2
Sales and Services	3,147	9,587	3.6	6.5
Auxiliary and Service Enterprises[3]	5,877	9,961	6.7	6.7
Other	749	1,518	.9	1.0
Total	$87,082	$148,518	100.0	100.0

[1] Includes State contribution to nonacademic employees' retirement. ($4,734,000 in 1957-58; $3,222,000 in 1955-56; $2,493,000 in 1953-54).

[2] Excludes income for three major Atomic Energy Commission projects ($114,307,000 in 1957-58; $73,247,000 in 1955-56; $53,933,000 in 1953-54).

[3] Includes income of separately incorporated student association ($5,525,000 in 1957-58; $5,043,000 in 1955-56; $3,513,000 in 1953-54).

years, with the University accounting for three-quarters of the increase, largely because of the completion of teaching hospital facilities at both Los Angeles and San Francisco. Independent institutions accounted for most of the remainder.

7. The capital outlay increase between 1948-49 and 1957-58 was certainly significant. It was an increase of $132,000,000 in yearly amount. This increase was more than half accounted for by the state colleges. In considering capital outlay, however, the total expenditure of $704,000,000 during the ten-year period is of more importance than the yearly level. State colleges had the largest total, about one and one-half times the expenditures of independent institutions; the University had the second largest total; and junior colleges had the third largest.

8. Current expenditures of public institutions more than tripled while they less than doubled for independent institutions.

9. Total expenditures from State funds were over four times as great in 1957-58 as in 1948-49, increasing $198,000,000. Substantially more than half of the increase was for current expenditures.

10. Because of the greatly increased expenditures of state colleges for capital outlay in 1957-58, considerably more than half of the total increase between the first and last year was expended by the state colleges.

11. Of the increase in expenditures of State funds for current expenditures, the University accounted for more than the total of junior colleges and state colleges combined.

12. Of the total current expenditures of junior colleges, a decreasing percentage was from State funds. This proportion increased and then declined for the University, but continued to rise throughout the period for the state colleges.

13. Although a valid projection of expenditures and State appropriations for future years can only be made when all individual factors are evaluated, a safe conclusion is that, with the projected great increases in enrollment, expenditures—and, of necessity, State appropriations—will increase materially in the next fifteen years, as predicted in Section V.

Section III

ANALYSIS OF OPERATING COSTS, 1957-1958

Expenditures of all segments and institutions of higher education in California for both current expenses and capital outlays have increased at an ever-accelerating pace over the past decade. The population of the State and the number of students being served by the colleges and universities have also increased very rapidly. Just how much costs have increased in relation to the increased service and whether the unit costs have changed with the increase in expenditures can be determined only by analysis of the basic data. Only through a most careful study of the several variable factors concerned can accurate conclusions be obtained. This section of the report will attempt such an analysis.

Had the recommendations of the 1955 *Restudy*[1] been fully established in practice, the task of the authors of this report would have been relatively easy. One of the recommendations of the earlier study was:

> . . . that the staff of the Liaison Committee, in cooperation with the central staffs of the three segments of public higher education and the administrative officers of individual institutions, decide what data would be most valuable for the purpose of determining trends in unit expenses and related matters [and that] these data be gathered continuously or periodically by the three segments of public higher education in California for the use of their faculties, administrative officers, and governing boards.[2]

A few basic records are now being regularly collected by several agencies involved. Several institutions are making periodical analyses of certain of their expenditures. However, the Liaison Committee took no official action to insure that this excellent suggestion would be fully implemented; this Committee will surely repeat that recommendation.

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[1] McConnell, Holy, and Semans, *op. cit.*

[2] *Ibid.*, p. 459-460.

Cost Per Student Credit Hour

One of the most significant units for evaluating costs within an institution is the cost (or expense) per student credit hour. The number of student credit hours is the sum of the products of the credit-hour value of each course and the number of students enrolled in the course. The cost per student credit hour can be computed for any of the categories of cost set forth in the classification in "Definitions and Categories Used" in Section I of this report.

The three units of cost per student credit hour computed in this study are as follows:

1. Cost per student credit hour for teaching expense, defined to include that part of item 1, a, (5), in "Definitions and Categories Used" in Section I, which represents the cost of the salaries of the instructors involved in teaching for the proportion of their time concerned with instruction, plus the clerical salaries, supplies, and equipment related to teaching.
2. Cost per student credit hour for *departmental* teaching expense comprises the teaching expense described above and all other departmental expenses, including those of faculty or departmental research and departmental administration.
3. Cost per student credit hour for *institutional* teaching expense includes the departmental expense described above and all other expenses of the institution *except* those of summer sessions, extension and public service, organized research, organized activities, auxiliary enterprises, and student aid.

These three measures are the units of cost principally used in the *Restudy*. They served as the basis for most of the analytical material presented in Chapter VII of that report and are used in this one. In this report, the term "*cost* per student credit hour" is used; it is synonymous with "*expense* per student credit hour."

Limitations and Cautions Necessary: Values of Unit Cost Figures

Unit cost figures are a valuable tool for analyzing expenditure data; however, they are only one device for analysis and only one of many tools available for evaluation. Certain limitations and cautions must be noted in connection with their use.

The first limitation is that such use makes the assumption, first, that the data upon which they are based are uniform and accurate. This assumption is frequently not true, despite all attempts to obtain uniformity. Unit-cost figures from *different* institutions are comparable only when they have been computed from beginning to end by identical procedures. Specifically, in determining instructional costs, one institution may deduct a portion of a professor's salary by charging it to some activity other than instruction (for example, research or institutional administration) and another institution may include his entire salary even though he is carrying on similar noninstructional activities; consequently, the comparison will be invalid. For this reason, making direct comparisons of unit costs for instruction in a small liberal arts college with, for example, those in a large university is often difficult, if not hazardous. In the former case, teaching may be regarded as the exclusive responsibility of the faculty. Each professor may be employed and compensated (and his time charged) specifically for that single purpose, although he may actually have additional responsibilities beyond his assigned responsibilities in the classroom. In a large university, teaching may be regarded as only one of several functions of the faculty. The manner in which salaries are charged to teaching and to other functions and activities will determine the validity of comparisons between such different situations.

A second limitation is that unit cost data assume that all instruction is of equal quality. Such data provide only *quantitative* measures. They give no evidence of the *quality* of instruction.

A third limitation stems from the inability on the part of laymen and perhaps even many professional educators to understand and interpret the data properly and to view this measure in its proper perspective.

Despite their admitted limitations and potential dangers, unit-cost data serve a useful purpose in providing comparisons between institutions. Where, under comparable conditions, some unit costs are very different from each other, explanations or justifications of the differences should be sought. In any event, a study should be made of the relative cost of providing presumably similar programs and services; that is the purpose of this section of the report.

Definition of Full-Time-Equivalent Teacher

Many members of an instructional staff in colleges and universities divide their time between instruction, departmental administration, research, and other responsibilities. Time spent on activities other than instruction is excluded. Actual teaching "loads" vary. In some institutions a "standard teaching load" is twelve credit hours. Thus, an individual who teaches nine credit hours and also spends one-fourth of his time on administration may be counted as .75 of a full-time-equivalent teacher. Almost any combination of teaching and other duties may be found with ranges of teaching load from three to fifteen or more credit hours.

In connection with this point a special explanation is necessary, particularly with respect to comparisons of costs among junior colleges, state colleges, and universities. In junior colleges and state colleges a teacher's time is devoted almost exclusively to instruction; virtually no departmental research is done and relatively small amounts of time are required for nonteaching activities. The typical junior college instructor teaches about fifteen credit hours, and the state college instructor, about twelve credit hours. However, the typical teaching load in the University is less; university professors are presumed to devote a portion of their time to research or writing or some other related function. Consequently, in estimating unit costs within the University, substantial adjustments are usually made in the amount of a professor's salary charged to the teaching function. These reductions are explained and justified on the basis that research and public service are recognized functions of the University.

Credit-Hour Costs for Teaching, Departmental Teaching, and Institutional Teaching Expenses

Tables 13, 14, and 15 set forth detailed unit costs for teaching expense, departmental teaching expense, and institutional teaching expense, respectively, as defined above. For each institution the number of student credit hours and the total expenditure upon which the computation is based are shown. Also shown for the state colleges and junior colleges are the costs of lower-division, upper-division, and graduate instruction.

Teaching Expense Per Student Credit Hour. Table 13 presents the unit costs for teaching expense per student credit hour for the junior colleges, the state colleges, and the University, campus by campus. Twenty-four junior college *districts* are listed (Los Angeles includes several separate institutions), eleven state college campuses, and five campuses of the University. The three newest state colleges now in operation (San Fernando, Alameda, and Orange) are not included in the list because they did not operate in 1957-58.

Only at the lower-division level may the figures for all three segments be compared, since junior colleges offer only lower-division teaching. One may compare within each segment the institutions that have the lowest teaching expense per student credit hour. On such a basis the following comparison may be made: Fullerton Junior

College, $11.81; Chico State College, $12.27; University of California at Davis, $8.95.

At the upper-division level comparisons may be made between the state colleges and campuses of the University. The lowest state college figure is Los Angeles, $13.42; the lowest University campus figure is Los Angeles, $17.24. Upper-division teaching expense per student credit hour is generally about the same at the larger campuses of both the state colleges and the University.

TABLE 13

TEACHING EXPENSE PER STUDENT CREDIT HOUR BY LEVEL OF INSTRUCTION, 1957-58

Type of Institution	Student Credit Hours[1]	Expenditures	Teaching Expense Per Student Credit Hour		
			Lower Division	Upper Division	Graduate
Junior College Districts					
Los Angeles	621,440	$8,396,148	$13.51	......	......
Pasadena	169,100	2,025,146	11.98	......	......
El Camino	100,700	1,419,700	14.10	......	......
Fullerton	75,420	890,663	11.81	......	......
Contra Costa	74,820	1,191,039	15.92	......	......
San Mateo	73,840	1,099,947	14.90	......	......
Mt. San Antonio	65,860	969,811	14.73	......	......
San Bernardino	63,260	857,681	13.56	......	......
Compton	63,040	793,643	12.59	......	......
Modesto	60,760	902,742	14.86	......	......
Orange Coast	53,920	699,029	12.96	......	......
Chaffey	41,800	743,033	17.78	......	......
Riverside	38,880	499,790	12.85	......	......
Santa Rosa	38,600	558,427	14.47	......	......
Sequoias	33,120	430,092	12.99	......	......
Santa Ana	29,880	382,593	12.80	......	......
Hartnell	25,060	486,130	19.40	......	......
American River	24,880	411,440	16.54	......	......
Marin	24,780	399,065	16.10	......	......
Yuba	22,740	338,695	14.89	......	......
Sierra	15,600	276,698	17.74	......	......
N. San Diego	12,880	205,074	15.92	......	......
Cerritos	11,540	290,822	25.20	......	......
Santa Maria	9,420	139,362	14.79	......	......

[1] Includes student credit hours from adult education and summer sessions.

TABLE 13—(Cont.)

TEACHING EXPENSE PER STUDENT CREDIT HOUR
BY LEVEL OF INSTRUCTION, 1957-58

Type of Institution	Student Credit Hours[1]	Expenditures	Teaching Expense Per Student Credit Hour		
			Lower Division	Upper Division	Graduate
State Colleges					
Chico	81,462	$1,371,032	$12.27	$25.02	$46.02
Fresno	146,171	2,506,543	13.79	22.02	33.86
Humboldt	40,446	834,187	14.67	37.68	30.59
Long Beach	152,431	2,277,359	13.78	15.07	24.91
Los Angeles	187,108	3,020,441	......	13.42	20.69
Sacramento	101,278	1,696,053	13.85	19.07	19.05
San Diego	199,673	3,133,278	12.29	19.90	16.32
San Francisco	198,180	3,136,256	13.23	17.56	19.94
San Jose	290,486	5,146,313	13.31	22.48	26.80
Polytechnic KV	24,633	442,246	16.56	20.54	......
Polytechnic SLO	128,326	2,217,602	14.36	20.69	25.91
University of California					
Berkeley	470,894	9,169,095	9.45	18.94	55.76
Los Angeles General Campus	359,631	7,126,095	11.41	17.24	67.80
Davis	62,948	859,341	8.95	18.78	27.49
Riverside	23,344	577,024	16.91	43.21	......
Santa Barbara	66,219	1,295,309	15.07	27.33	......

[1] Does not include student credit hours for extension and summer sessions.

Departmental Teaching Expense Per Student Credit Hour. Table 14 presents data on departmental instruction expense per student credit hour. In this case, however, only the state colleges and the University campuses are included in the analysis; comparable data for the junior colleges were not available. This table shows that the range in lower-division cost per student credit hour for the state colleges is from $12.95 at Chico to $20.05 at the Kellogg-Voorhis Unit of California State Polytechnic College, and that the corresponding range at the University is from $16.11 at Berkeley to $33.74 at Davis. Costs for lower-division, upper-division, and graduate student credit hours in the table are self explanatory.

TABLE 14

Departmental Teaching Expense Per Student Credit Hour by Level of Instruction, 1957-58

Type of Institution	Student Credit Hours[1]	Expenditures	Departmental Expense Per Student Credit Hour		
			Lower Division	Upper Division	Graduate
State Colleges					
Chico	81,462	$1,447,000	$12.95	$26.41	$48.60
Fresno	146,171	2,607,994	14.35	22.91	35.23
Humboldt	40,446	913,377	16.06	41.25	33.49
Long Beach	152,431	2,460,414	14.89	16.28	26.91
Los Angeles	187,108	3,273,481	......	14.55	22.43
Sacramento	101,278	1,814,349	14.82	20.40	20.38
San Diego	199,673	3,369,478	13.22	21.40	17.55
San Francisco	198,180	3,419,754	14.43	19.14	21.74
San Jose	290,486	5,437,778	14.06	23.76	28.32
Polytechnic KV	24,633	535,537	20.05	24.87	......
Polytechnic SLO	128,326	2,420,434	15.68	22.59	28.27
University of California					
Berkeley	470,894	15,628,251	16.11	32.28	95.03
Los Angeles General Campus	359,631	11,261,212	18.03	27.24	107.15
Davis	62,948	3,239,131	33.74	70.80	103.63
Riverside	23,344	955,338	27.99	71.55	......
Santa Barbara	66,219	1,855,743	21.59	39.15	......

[1] Does not include student credit hours for extension and summer sessions.

Institutional Teaching Expense Per Student Credit Hour. Table 15 presents information on institutional teaching expense per student credit hour. The table shows that the range in lower-division institutional teaching expense per student credit hour for the junior colleges ranges from $20.63 at Fullerton to $43.38 at Cerritos. In the state colleges the corresponding range is from $21.13 at San Jose to $44.30 at the Kellogg-Voorhis Unit of California State Polytechnic College. For the University the comparable figures vary from $29.53 at Berkeley to $71.94 at Riverside. The lowest institutional teaching expense within each segment may be compared for the lower division, as follows: Fullerton Junior College, $20.63; San Jose State College, $21.13; Berkeley campus of the University, $29.53.

Similar comparisons may be noted for the upper division. The state college with the lowest unit cost for the upper division is Long Beach, where the cost is $23.22 per student credit hour. The Los Angeles campus of the University has the lowest corresponding cost, $45.91.

Graduate costs for institutional teaching expense per student credit hour are much higher in the University than in the state colleges for the obvious reason that the University's program is much more extensive and specialized. The state colleges offer programs leading only

TABLE 15

INSTITUTIONAL TEACHING EXPENSE PER STUDENT CREDIT HOUR BY LEVEL OF INSTRUCTION, 1957-58

Type of Institution	Student Credit Hours[1]	Expenditures	Institutional Teaching Expense Per Student Credit Hour		
			Lower Division	Upper Division	Graduate
Junior College Districts					
Los Angeles	621,440	$15,079,036	$24.26	......	......
Pasadena	169,100	3,685,617	21.80	......	......
El Camino	100,700	2,663,834	26.45	......	......
Fullerton	75,420	1,555,617	20.63	......	......
Contra Costa	74,820	2,048,565	27.38	......	......
San Mateo	73,840	1,827,367	24.75	......	......
Mt. San Antonio	65,860	1,781,195	27.05	......	......
San Bernardino	63,260	1,496,448	23.66	......	......
Compton	63,040	1,534,361	24.34	......	......
Modesto	60,760	1,535,499	25.27	......	......
Orange Coast	53,920	1,232,945	22.87	......	......
Chaffey	41,800	1,192,779	28.54	......	......
Riverside	38,880	853,591	21.95	......	......
Santa Rosa	38,600	1,016,162	26.32	......	......
Sequoias	33,120	712,070	21.50	......	......
Santa Ana	29,880	719,441	24.08	......	......
Hartnell	25,060	780,982	31.16	......	......
American River	24,880	670,144	26.94	......	......
Marin	24,780	670,750	27.07	......	......
Yuba	22,740	647,014	28.45	......	......
Sierra	15,600	462,770	29.66	......	......
N. San Diego	12,880	395,165	30.68	......	......
Cerritos	11,540	500,581	43.38	......	......
Santa Maria	9,420	237,993	25.26	......	......

[1] Includes student credit hours from adult education and summer sessions.

TABLE 15—(Cont.)

INSTITUTIONAL TEACHING EXPENSE PER STUDENT CREDIT HOUR BY LEVEL OF INSTRUCTION, 1957-58

Type of Institution	Student Credit Hours[1]	Expenditures	Institutional Teaching Expense Per Student Credit Hour		
			Lower Division	Upper Division	Graduate
State Colleges					
Chico	81,462	$2,478,885	$22.18	$45.24	$83.25
Fresno	146,171	4,427,227	24.36	38.89	59.80
Humboldt	40,446	1,798,769	31.65	81.28	65.99
Long Beach	152,431	4,028,294	24.38	26.65	44.06
Los Angeles	187,108	5,225,523	......	23.22	35.80
Sacramento	101,278	3,100,489	25.32	34.87	34.83
San Diego	199,673	5,484,323	21.52	34.84	28.57
San Francisco	198,180	5,713,288	24.39	31.98	36.32
San Jose	290,486	8,169,775	21.13	35.69	42.55
Polytechnic KV	24,633	1,183,682	44.30	54.96	......
Polytechnic SLO	128,326	4,117,102	26.67	38.42	48.10
University of California					
Berkeley	470,894	28,646,088	29.53	59.16	174.19
Los Angeles General Campus	359,631	18,980,224	30.39	45.91	180.59
Davis	62,948	6,433,919	67.02	140.63	205.84
Riverside	23,344	2,455,473	71.94	183.89	......
Santa Barbara	66,219	3,501,650	40.74	73.89	......

[1] Does not include student credit hours for extension and summer sessions.

to the master's degree in selected fields, whereas the University has a wide variety of highly technical programs for the doctorate.

Tables 16, 17, and 18 are companion tables to the three preceding tables on unit costs per student credit hour. These tables present the expense per *full-time* student by academic level of student. They are presented in the same form as the preceding tables and are derived from them.

Teaching Expense Per Full-Time Student. Table 16 presents the *teaching expense* per full-time student by academic level of student for the junior colleges, the state colleges, and the University. However, comparisons among the three segments of higher education should be

TABLE 16

Teaching Expense Per Full-Time Student by Academic Levels of Students, 1957-58

Type of Institution	Teaching Expense Per Full-Time Student Lower Division	Type of Institution	Teaching Expense Per Full-Time Student		
			Lower Division	Upper Division	Graduate
Junior College Districts		**State Colleges**			
Los Angeles	$392	Chico	$386	$668	$749
Pasadena	347	Fresno	411	557	584
El Camino	409	Humboldt	442	820	842
Fullerton	342	Long Beach	398	400	421
Contra Costa	462	Los Angeles	....	414	332
San Mateo	432	Sacramento	409	515	455
Mt. San Antonio	427	San Diego	399	489	422
San Bernardino	393	San Francisco	405	463	465
Compton	365	San Jose	426	580	613
Modesto	431	Polytechnic KV	534	674	....
Orange Coast	376	Polytechnic SLO	464	667	722
Chaffey	516				
Riverside	373				
Santa Rosa	420	**University of California**			
Sequoias	377	Berkeley	$271	$482	$760
Santa Ana	371	Los Angeles General Campus	287	427	742
Hartnell	563	Davis	256	413	595
American River	480	Riverside	506	913	....
Marin	467	Santa Barbara	410	651	....
Yuba	432				
Sierra	514				
N. San Diego	462				
Cerritos	731				
Santa Maria	429				

made only at the lower-division level. The table shows that the range of teaching expense per full-time student in junior colleges is from $342 at Fullerton to $731 at Cerritos. The lowest institution in each segment may be compared as follows: Fullerton Junior College, $342; Chico State College, $386; Berkeley campus of the University, $271.

Comparisons may be made at the upper-division or graduate levels between the state colleges and campuses of the University.

Departmental Teaching Expense Per Full-Time Student. Table 17 presents the *departmental teaching expense* per full-time student for the several state colleges and the several campuses of the University. As noted previously, data were not available for the junior colleges.

Institutional Teaching Expense Per Full-Time Student. Table 18, which is derived from Table 15, shows the *institutional teaching*

TABLE 17

Departmental Teaching Expense Per Full-Time Student by Academic Levels of Students, 1957-58

Type of Institution	Departmental Expense Per Full-Time Student		
	Lower Division	Upper Division	Graduate
State Colleges			
Chico	$407	$705	$790
Fresno	427	580	608
Humboldt	483	898	922
Long Beach	430	432	472
Los Angeles	......	449	368
Sacramento	437	551	487
San Diego	429	526	454
San Francisco	441	508	507
San Jose	450	613	648
Polytechnic KV	646	815	......
Polytechnic SLO	506	729	788
University of California			
Berkeley	$463	$821	$1,295
Los Angeles General Campus	454	674	1,173
Davis	963	1,559	2,245
Riverside	837	1,511	......
Santa Barbara	587	933	......

TABLE 18

INSTITUTIONAL TEACHING EXPENSE PER FULL-TIME STUDENT BY ACADEMIC LEVELS OF STUDENTS, 1957-58

Type of Institution	Institutional Teaching Expense Per Full-Time Student Lower Division	Type of Institution	Institutional Teaching Expense Per Full-Time Student		
			Lower Division	Upper Division	Graduate
Junior College Districts		State Colleges			
Los Angeles	$704	Chico	$680	$1,208	$1,354
Pasadena	632	Fresno	725	984	1,032
El Camino	767	Humboldt	953	1,770	1,817
Fullerton	598	Long Beach	704	708	745
Contra Costa	794	Los Angeles	....	717	588
San Mateo	718	Sacramento	747	942	833
Mt. San Antonio	784	San Diego	699	856	739
San Bernardino	686	San Francisco	744	851	847
Compton	706	San Jose	672	921	973
Modesto	733	Polytechnic KV	1,428	1,802	....
Orange Coast	663	Polytechnic SLO	861	1,239	1,340
Chaffey	828				
Riverside	637				
Santa Rosa	763	University of California			
Sequoias	624	Berkeley	$848	$1,505	$2,374
Santa Ana	698	Los Angeles General Campus	765	1,136	1,977
Hartnell	904	Davis	1,914	3,096	4,459
American River	781	Riverside	2,151	3,884	....
Marin	785	Santa Barbara	1,107	1,761	....
Yuba	825				
Sierra	860				
N. San Diego	890				
Cerritos	1,258				
Santa Maria	733				

expense per full-time student. It should be emphasized that this particular table presents figures which are valid and valuable bases for comparisons between institutions with comparable programs in that it is the total instructional expense involved within the institution which would serve as an index of the costs involved in educating the students.

The table shows that at the lower-division level the following institutions have the lowest figures: Fullerton Junior College, $598; San Jose State College, $672; and the Los Angeles campus of the University, $765. The range of institutional teaching expense per full-time student in the junior colleges is from $598 at Fullerton to $1,258 at Cerritos. It will be noted that the ranges within the state colleges and the campuses of the University are considerably greater. The extreme costs in all cases are explained by low enrollments in the lower divisions of the institutions concerned.

Comparisons in institutional teaching expense per full-time student for upper-division and graduate students are clearly apparent and would appear to need no further explanation.

Sources of Data and Procedures Followed in Data Analysis

The data in the preceding six tables were derived from a number of sources and by different methods. For the district junior colleges the various expenses and the student credit hour for each were obtained from *Average Daily Attendance and Selected Financial Statistics of California School Districts, 1957-58—Junior College Study,* prepared by the California State Department of Education. The teaching expense used for each district junior college in Table 13 was computed on the basis of 88 per cent of the "Instruction—Certificated Salaries" plus all the "Other Expense" as reported in Table 4 on page 6 of that study. To compute a "departmental teaching expense" was not feasible; hence, Table 14 does not include junior colleges. In Table 15, which shows "institutional teaching expense" for the junior colleges, the total expenses as reported in Table 3 of the above-mentioned junior college study were used. The number of student credit hours produced at each junior college used in Tables 13 and 15 was computed on the basis of twenty student credit hours per average daily attendance. The average daily attendance figures used are found in Table 1 of that same report. The methods used in computing the teaching expense, institutional teaching expense, and the student credit hours for the junior college districts were based on a study that included representative junior colleges, plus the experience of a number of junior college administrators.

For the state colleges and the University the methods were identical to each other, although different from the junior colleges. Students at state colleges and the University who are registered in the lower division, upper division, or graduate division do not necessarily take all their courses exclusively in one of these divisions. Typically, a lower-division student registers mostly for lower-division courses with a few units of upper-division courses. An upper-division and graduate student commonly registers for a preponderance of upper-division and graduate courses but he may take a few units of lower-division course work. Because of the difference in cost of the courses at the various levels, the mean number of credit hours had to be determined for the state colleges and the University by lower-division, upper-division, and graduate students in each of these three levels. At the junior colleges no problem of course "mix" existed. All students are assumed to be lower-division students enrolled exclusively in lower-division courses. In general, the procedure was as follows:

1. Each state college determined the "mix" for all regular students in the fall semester 1957 and reported these data to the Committee. These figures were doubled to produce an annual, or two-semester, "mix."

2. From the *Statistical Report of the California State Colleges, 1957-58*, the number of regular students at each level was obtained for fall 1957. For each state college the number of lower-division students was multiplied by the mean number of lower-division credit hours carried by students at that college. To this number was added the product of upper-division students times the mean number of lower-division credit hours and the product of the graduate students times the mean number of lower-division credit hours. The sum was the number of student credit hours produced in lower division. In similar fashion, the number of upper-division and graduate student credit hours was determined for each state college.

3. The student credit hours determined in item 2 above were then multiplied by the appropriate cost per student credit hour reported in Table 52 of the *Restudy*. These values were the amount that it would have cost to educate the 1957 enrolled student in 1953, all other factors remaining constant.

4. The teaching expense, departmental teaching expense, and institutional teaching expense for each state college for 1957-58 were then

determined by totaling appropriate items from the "actual" column in *State of California Budget for the Fiscal Year July 1, 1959, to June 30, 1960.*

5. Each of the three values found in item 4 was divided by the 1953 cost determined in item 3 above. These three figures (teaching expense factor, departmental teaching expense factor, and institutional teaching expense factor) represented the relationship of the actual 1957 costs to "1953 costs" for the 1957 enrollment of students.

6. For each state college the factor for each of the expenses, determined in item 5 above, was multiplied by the appropriate cost per student credit hour reported in Table 54 of the *Restudy* under the headings of "Lower Division," "Upper Division," and "Graduate."

Except for sources, the procedure for determining the data for the University in Tables 13, 14, and 15 was the same as for the state colleges, omitting steps 1 and 2 because the University's data were directly available for step 3 in terms of student credit hours by levels of instruction.

The junior college section in Tables 16 and 18 was based on the data for the junior colleges in Tables 13 and 15. Since the mean load of full-time undergraduate students at the University and the state colleges was approximately twenty-nine credit hours for the year, the decision to assume this same mean load for the junior college full-time student for comparative reasons seemed appropriate. The values reported for the junior college full-time student costs in Tables 16 and 18 were determined by multiplying by twenty-nine the corresponding values in Tables 13 and 15.

For the state colleges and the University, Tables 16, 17, and 18 were derived on the basis of the student-level and the course-level "mix." For example, the teaching expense per full-time student (Table 16) was found in this manner:

1. The mean lower-division credit-hour load carried by lower-division students was multiplied by the cost per student credit hour for lower division courses in Table 13. To this was added the product of the mean upper-division credit-hour load carried by lower-division students and the cost per student credit hour of upper-division courses reported in Table 13. In those few cases where lower-division students were carrying graduate courses at a state college or at the University similar procedures were followed. At the Berkeley campus for example, the calculation of cost for teaching expense per average full-time lower-division student for 1957-58 was as follows:

Level of Instruction	Average Student Credit Hours Taken	Cost Per Student Credit Hour Taken	Total
Lower Division	26.31	$9.45	$248.63
Upper Division	1.17	18.94	22.16
Graduate Division	.01	55.76	.56
	27.49		$271.35[1]

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[1] This is the figure found for the Berkeley campus in Table 16.

2. For upper-division students, their mean loads in the three levels were multiplied by the corresponding costs per student credit hour reported in Table 13 of the study. The sum of the values was the cost per full-time upper-division student.

3. The same procedure was used for graduate students.

The state college and University sections of Tables 17 and 18 were derived in a similar fashion from Tables 14 and 15, respectively.

Increases in Unit Costs Since 1953-54

The *Restudy*, based on data for 1953-54, determined comparable unit costs for most of the same institutions included in this study and for some not included. Its analysis was more complete and its procedures were more detailed than this study permitted. In general, however, the results of the two studies may be compared with assurance that the extent of any such differences as may result from minor differences in method of treating the data or classification of cost items are negligible.

Following are comparisons of unit costs from the two studies designed to show the degree of increase in such unit costs since 1953-54. Five institutions have been selected for this purpose. The first three listed are the ones that had the lowest costs per student credit hour for teaching expense in 1957-58. They are the Fullerton Junior College, Chico State College, and the Berkeley campus of the University. The latter three are the largest units in terms of lower-division student credit hours—the Los Angeles Junior College District, which operates several separate junior colleges; San Jose State College; and, again, the Berkeley campus of the University. These illustrative figures represent *lower-division* costs per student credit hour for *teaching expense*. This particular measure was selected because it represents the most valid basis on which to compare costs between the two fiscal years, not because it is the best criterion of relative cost.

Teaching Expense Per Student Credit Hour[1]	1953-54	1957-58	Increase
Fullerton Junior College	$10.29	$11.81	14.8%
Chico State College	11.34	12.27	8.2
University of California, Berkeley	9.04	9.45	4.5
San Jose State College	9.27	13.31	43.6
Los Angeles Junior Colleges[2]	9.10	13.51	48.5

[1] For junior colleges, student credit hours include adult education and summer sessions; for state colleges and the University, student credit hours do not include extension and summer sessions.

[2] Average for the several Los Angeles junior colleges.

During this period the increase has varied among institutions. The University's figures for Berkeley have increased only 4.5 per cent; the other institutions have increased from 8.2 per cent at Chico to 48.5 per cent at the Los Angeles junior colleges.

Such a wide variation in increases is not easy to explain. It is the product of a complex of variables, including differences in size of the student body in the lower division, policies with respect to class size and student-teacher ratios, changes in programs, and the like. One obvious factor that has tended generally to increase teaching costs is unquestionably salary increases. Since 1953-54, State salaries have been increased 15 to 20 per cent by direct adjustment of the State and University salary schedules. Increases in some school districts that operate junior colleges may have been greater than that. The general level of costs for other services and for supplies and equipment has also tended to increase.

Every indication points to a continuation of this general trend. One may predict with confidence that unit costs for instruction will be greater in the next few years. If the present trend continues, unit costs may conceivably double by 1975, although they would appear unlikely to do so. Total expenditures are likely to more than double, however.

Ability of the State to Finance the Program

The report of the Technical Committee on California's Ability to Finance Higher Education, which is summarized in Chapter X of the Master Plan Report, deals with the problem of the State's financial capacity and projects the revenues that will presumably be available to pay the bill for higher education. That study, like this one, is based on *status quo* and uses as its base the fiscal year 1957-58. A comparison of the findings of that study with the costs presented in this report indicates that revenue problems will probably develop shortly after

1962. If they do, they will stem from the fact that the number of students of college age is destined to increase sharply during the 1960's thereby putting additional pressure on budgets for higher education. In other words, not only will unit costs increase but also the number of students desiring a college education. As this development takes place, and it appears certain, some degree of clamor will undoubtedly be heard within the State for reduction of the costs of higher education. Under such circumstances, the Legislature may find itself under pressure to reduce the costs of higher education, and will demand greater efficiency, more economies, and maybe even reductions of services. Controlling boards will explore ways and means of stretching the education dollar. The problem of "economy in higher education" will probably get much attention during the 1960's.

Demands for Efficiency and Economy

Suggestions from critics of higher education and individuals and agencies who demand greater efficiency or economy usually may be classified under three major headings:

1. Greater economy and efficiency in teaching and more effective use of the instructional plant.
2. Reductions in unwarranted educational services, often labeled "frills."
3. Sources of additional non-State revenue, usually implying higher tuition and fees.

The most frequently proposed ways of effecting greater economy and efficiency are:

1. Using larger classes and higher student-teacher ratios in instruction.
2. Adopting presumably more efficient instructional techniques, such as closed-circuit television, learning machines, mechanical aids, and library use and self-study techniques along lines of European education.
3. Adopting such devices as the three-semester-per-year plan or a similar scheme for maintaining the full use of the school plant during the entire calendar year.

The second most frequently proposed ways of effecting greater economy and efficiency are:

1. Elimination of larger numbers of prospective students through higher admission requirements.
2. Elimination of certain educational services now provided, such as particular courses for nondegree students offered as adult education

in the junior college program; certain courses in physical education, music, and the arts in state colleges; and certain services provided citizens by the University through extension programs.

Additional sources of non-State revenue to which critics point as potential avenues of savings for the taxpayer include, most obviously, higher tuition and fees, especially aimed at the junior colleges, which presently are completely free; the imposition of out-of-state tuition in the junior colleges, which presently admit any student free; and the imposition all along the line of a wide variety of special fees and charges, including fees for library, laboratory, physical education, music, and parking.

The purpose of this study is not to suggest the adoption of any so-called economies regardless of their relative merits; however, certain of them do deserve some consideration, and attention should be called to their financial implications. For this reason, certain more important proposals have been singled out for comment.

Effects of Larger Classes and Higher Student-Teacher Ratios. The most important single factor that affects the cost of instruction in a college is the ratio of students to teachers. These ratios vary widely among institutions. Although the state colleges and the University both operate under clearly defined policies in this particular respect, variations exist, nevertheless, both within and among the institutions. Ratios may vary among the colleges and universities of the State from a low of eight or ten to one to a high of from twenty to twenty-five or more to one. The ratio varies among the campuses of the University, depending principally on the size of the particular campus. Some variation exists within the state college system, although the staffing formula in use tends to keep variation at a minimum. The range is doubtless greatest among the independent colleges. In some small private institutions the student-teacher ratio is very low.

Recently much attention has been focused on this factor as a conditioning influence on the costs of higher education. The Governor of Massachusetts recently called public attention to the need for study of this matter and was instrumental in getting the issue before the National Commission on Accrediting and the American Council on Education. Currently the six regional accrediting agencies in the United States are focusing attention on the problem.

The fact is that the optimum student-faculty ratio for any particular situation is not known. That the ratios will vary in terms of the needs of particular types of institutions and instruction is generally admitted. No one advocates a uniform and clearly established ratio. Most educators will agree that the issue merits careful attention and study. Quite possibly some adjustments can be effected to provide greater efficiency and economy in higher education in California. Research to provide answers to the problems in this area is needed. Support of such fundamental study would doubtless prove economical.

The Use of Newer Instructional Techniques. One center of controversy within the area of teaching techniques is the wider use of instructional television, which presents a complex problem that merits careful study. No evidence exists at present to indicate definitely just how effective television can be as an instructional device. Minor experimental work is currently being conducted within the University and in one or two of the state colleges. Whether educational television will, in effect, save the taxpayer's dollars is presently unknown; what little evidence exists is not reassuring. Much the same situation exists with respect to such instructional apparatus as learning machines and similar devices. For the present all that can be stated with certainty is that the question of their general adoption deserves further study. Here again fundamental research is needed and would doubtless pay dividends.

Wider Use of the School Staff and Plant. Another obvious potential avenue of economy and efficiency in higher education is the wider use of college facilities throughout the entire calendar year. While the extent of the savings would not be as great as is sometimes predicted, unquestionably instructional facilities stand vacant much of the time. These physical facilities could be better used if some plan could be established for organizing more efficiently the instructional week, semester, and year. If more college and university classes could be held in the evening or on Saturday, for example, fewer buildings, laboratories, and classrooms would be needed. The problem, however, lies in convincing the general public—and most particularly the students—that such efficiency is necessary. The current trend in universities and colleges in California is in the direction of fewer, rather than more, Saturday classes. Evening classes, however, appear to be increasing.

To organize a college or university in such a way as to provide three semesters or four quarters per year is possible. In this connection, however, the fact is often overlooked that most university and state college campuses and most junior college campuses are presently used by summer sessions for six to fourteen weeks of the so-called "summer vacation."

Again, the problem of inducing students to attend college and university classes during the "third semester" or "fourth quarter" is the key to the problem. Although some regular students do attend summer sessions, the typical student thinks that doing so is a fine idea so long as somebody else does it; he himself wishes to have his own summer free for work or travel. Many students must work in the summer to earn funds to support themselves during the academic year. The typical parent often wishes to have his son or daughter available during the summer so that the family may take a vacation trip together. Possibly some scheme can be developed to make the plan work more effectively in the future.

Higher Admission Requirements. The report of the Technical Committee on Selection and Retention of Students, published separately, studies admission requirements and the problems of selection and retention of students. However, while higher admissions requirements may tend to reduce the number of students in higher education if applied to all three segments of higher education, the fact does not necessarily follow that raised admission requirements for the state colleges, or the University, or both, will reduce total expenditures for higher education. What may happen is that students who are not admitted to the state colleges will attend junior colleges or that students who are not admitted to the University will attend the state colleges. The relative costs of providing an education in the different levels or segments of the system, as noted in Section III, are somewhat different but not sufficiently different at the lower-division level to produce any very great reduction in over-all expense for the great mass of students. Also, changes in the "student mix" will cause costs to change.

The State government may be able to divert or transfer a portion of its burden by inducing students to attend the locally supported junior college. As a result, the pressure on the State government may be lessened, but the burden on the local junior college district will be increased. Almost certainly the local districts will demand more State aid; they will not accept the additional burden willingly.

As recommended in the technical committee report on selection and retention of students, this whole problem must have further study.

Elimination of the So-Called "Frills" and Free Services. Again, the fact is self-evident that the State may be able to reduce costs of higher education by cutting back on certain services provided. Such regressions have frequently been suggested. Probably the most frequently proposed curtailment is in the field of adult education in the junior colleges.

Within the state colleges and University some programs and courses of study are also subject to criticism. The courses most often criticized are those in art, music, or literature offered in the late afternoon and evening so that "limited" students can attend. Sometimes seminars and workshops organized for business and professional personnel are attacked. Critics sometimes charge that business and industry should pay the bill.

Sources of Additional Non-State Revenue. The most popular source of new revenue from non-State funds is, of course, tuition and fees. The argument is frequently presented that the beneficiary of education should pay a greater proportion of the costs of the benefits received. This controversy is so generally well known and so obvious as to need little attention. A study of the attitude of the Legislature to date shows that the people of the State generally feel that public education should be kept as free as possible. Thus far, at least, this idea of large increases in tuition and fees has not received any very general acceptance.

None of the public institutions in California charges students—even those from out-of-state—an amount that approaches the full cost of instruction. Some citizens contend that expecting California taxpayers, whether through local school districts or the State general fund, to subsidize the education of youth from other states and other nations is unjust.

The number of fees that might conceivably be levied upon the students is legion. In the past, the State Department of Finance has tended to oppose student fees because the level of fees has been quite low and its accountants have been able to demonstrate that the cost of collecting low fees usually exceeds, or at least equals, the amount of revenue produced. Only when a laboratory or library fee becomes fairly substantial does the net revenue exceed the expense of administering it. Yet a slow accretion of fees in most colleges and universities has taken place. In 1959, for example, the State took the unprecedented action of imposing substantial parking fees in the state colleges. While the action precipitated great resentment and much unfavorable reaction within particular communities, it has nevertheless provided a source of considerable revenue and made possible a bond issue for the construction of multiple-story parking facilities at several of the state college campuses. Special fees and assessments undeniably offer a source of some potential revenue. Here again, however, administration of fees and charges levied on the students is a controversial issue that merits most careful attention.

Costs of Research—Their Elusive Nature. To segregate and determine with accuracy the dollar costs of research is extremely difficult even under most favorable circumstances; it is an intangible service, or function, or "commodity." Research begins with ideas that are by-products of learning and study. How particular ideas come into being, or when, often cannot be determined. Some research, especially when conducted within a university or college, stems from, or is related to, instruction. Much research is conducted by professors who also teach. Students may on occasion assist with research only through asking the intelligent question that triggers the flash of intuition in the professor's mind to provide a clue to the solution of a vexing problem.

Few people question the significance of research in this modern age or its value and importance to society; most citizens recognize that it is absolutely essential. Most taxpayers, too, realize that our universities and colleges are the cradles of research and the most important sources of new ideas and advanced study, and they are willing to pay the bill for this service. But how much does it all cost?

At the University of California for the fiscal year 1957-58, research, both departmental and organized and including the three major Atomic Energy Commission projects, constituted approximately 64 per cent of the total expenditures. Over 78 per cent of the total expenditure of some $167,000,000 for research was financed by the federal government. These federal funds, augmented by donations, endowment funds, and other private sources, were of such large amounts that less than 20 per cent of the total current expense of research was borne by the State. The University operates research facilities at Berkeley and Livermore and at Los Alamos, New Mexico, all entirely supported by contract with the Atomic Energy Commission. Research is costly but would be even more costly to both the State and federal governments if the necessary facilities and staff had to be duplicated.

The University today operates the largest government-sponsored research program of any educational institution in the United States. To evaluate in dollars and cents the benefits, both tangible and intangible, that the University community and the State share as a result of this extensive program would be impossible.

Perhaps some measure of the values of research expressed in terms of accomplishment may be cited: 8 Nobel Prize winners on the faculty; 377 Guggenheim Fellowships awarded to outstanding faculty members as of 1958, putting the University first in this award; over 10 per cent of the total membership in the National Academy of Sciences made up of University faculty members; 221 published scientific papers by faculty members in 1956-57; and many other similar distinctions.

Costs of Specialized Professional Schools. Another less striking but nevertheless significant example of the quandary in which a cost accountant finds himself concerns the operation of highly specialized professional schools. A good example is medical schools operated by the major universities and the hospitals they operate within them as a means of educating physicians and nurses. At the University of California Medical Schools in San Francisco and Los Angeles, as at Stanford University and all other accredited medical schools, the University maintains hospitals to provide practical experience in its program of educating physicians. The receipts and expenditures for these hospitals are included in the University budget and are reflected in the financial statements of the University. While partially supported by State funds, these hospitals derive most of their support from fees collected from patients for services provided beyond teaching. The precise proportion of any such possible subsidy chargeable to the instructional budget of the medical schools is a highly theoretical judgment.

This same generalization can be made with respect to the operation of dental schools and dental clinics, schools of nursing that require hospital experience, schools of pharmacy, and other similar professional schools that have their own particular and specialized demands for student experience. The same is also true in agricultural education where farming operations are necessary for instruction or research. Financial accounting within these complex operations, particularly with instructional activities intermingled with services rendered to patients, clients, and society generally, is extremely difficult. Consequently—and especially because this study was developed very quickly—all such complex problems have been excluded from analysis in this study.

The amount of research conducted in the state colleges is slight. Junior colleges conduct none. Little professional education in medicine, law, or other professional fields except education is provided in the small private colleges of the State. Thus, this problem is limited principally to large universities—the University of California, Stanford, and the University of Southern California.

Costs of Extension Services. Another important function of the universities and state colleges of California is to provide extension instruction to students and others not regularly enrolled. The junior colleges operate so-called "adult education" programs for people in their communities. The University of California conducts a large extension program, which extends the services of the University to every section of the State. Revenues in excess of $4,800,000 accrued from fees assessed in 1958-59. In the same year enrollments were 165,344 in 4,854 programs. A total teaching staff of 5,361 was employed.

The state colleges also operate extension programs. However, the nature and scope of their offerings are much less extensive than the services provided by the University. Furthermore, extension in the state colleges is limited to courses of instruction conducted off-campus within the service areas of the several institutions. Such courses are usually conducted in public school buildings. The program is under the direction of the dean of summer sessions and special services in the college. A few of the state colleges employ directors of extension operations, usually part-time assignments. Most of the classes thus provided are designed for public school teachers and persons otherwise employed during the day who wish to continue their education on a part-time basis by enrolling for one or two classes per week in their own community. The state colleges in 1957-58 had over 23,000 enrollments in extension classes. San Francisco State had 8,351 enrollments (two semesters). Sacramento State maintained forty classes in thirty-three different communities in sixteen counties. Extension courses were offered in over a hundred different communities in California. Classes were held in every county except Alpine, Inyo, Modoc, Santa Barbara, and Sierra.

All such extension work in the state colleges is largely, if not completely, self-supporting. The State appropriates no funds for extension work; all instruction must be conducted on a self-sustaining basis. Substantial amounts of net revenue from extension operations in the state colleges are annually turned over to the General Fund of the State.

Costs of Summer Sessions. Summer sessions are conducted on all campuses of the University, except at La Jolla and Riverside, by all of the state colleges except California State Polytechnic College (which operates on a quarter plan) and by many of the independent colleges. Most junior colleges also operate summer sessions. Enrollments in summer sessions at the University in 1957 (all campuses) totaled 14,264. In state college summer sessions, the enrollments in 1957 were about 36,500.

Budgets and appropriations for state institutions of higher education in California do not include funds for summer sessions. Theoretically, they are self-supporting, but only so far as salaries of teachers are concerned is this strictly true. To a limited extent, summer sessions are self-supporting for certain other costs. In effect, however, the budgets of the institutions provide for most overhead administrative and operating costs. At both the state colleges and the University the tuition and incidental charges for instruction in summer sessions are substantially higher per unit of college credit than during the regular academic year. Salaries of State-employed teaching staff are paid from these revenues that accrue from tuition and fees. The independent institutions, of course, vary widely in practice.

To determine the costs to the State for instruction in summer sessions is difficult. The extent to which charges should be allocated for use of buildings and facilities that might otherwise be standing vacant or the precise extent to which costs of such services as telephone, heat, light, and similar maintenance and overhead expenses are concerned, is very controversial. They have been excluded from analysis in this report.

Receipts and expenditures for summer sessions are included in the material in Section II but are not included elsewhere in this study. For example, exceptions were specifically noted as in the case of Table 13 in this section.

Receipts and expenditures for summer sessions in the University of California and in the state colleges have also been excluded from the analysis of unit costs.

Costs of Agricultural Education. Education in the field of agriculture, while generally not classified as "professional" in the same category with medicine and law, is nevertheless a special case that merits particular mention. Such instruction requires a type of teaching and learning situation involving extensive facilities such as farms, stocks, and farming equipment, all of which is relatively expensive. Costs per student and costs per student credit hour are greater in agriculture than in most other undergraduate fields of study. This fact explains at least in part the higher unit costs shown in Tables 15 and 18 for Davis, Riverside, California State Polytechnic, Fresno, and Chico, although the extent of agricultural instruction at Chico is still very limited.

At Davis and Riverside the problem is further compounded by the fact that the agricultural operations are concerned so greatly with research. Although Davis is developing a generalized undergraduate program, a major function of the institution is related to advanced study in agriculture, including the operation of the only school of veterinary medicine in the State. The high unit costs at that institution reflect this abnormal situation. Because of limited time and inadequate staff, the Committee made no attempt to analyze costs of agriculture beyond noting that the factors thus explained operate to increase what otherwise might be more typical or more normal expenditure levels.

In addition to the large agricultural program operated during the regular sessions of the University, an agricultural extension program of some $4,800,000 was in effect in the fiscal year 1957-58. This program employed a teaching staff of 681; attendance at farmers' meetings exceeded 1,600,000 and enrollments in 4-H Clubs approximated 31,300.

Costs of Libraries. The cost of libraries was not singled out for particular consideration in this study. Libraries (i.e., the books, periodicals, etc., within the library building) are considered equipment; they are not generally classified as capital outlay. However, at least passing consideration should be given to providing adequate libraries in any plan for expanding higher education facilities. With the exception of the land and buildings, the library probably constitutes the highest expense item involved. Recognizing this fact, the Committee requested the California Library Association to develop and present estimates of costs for libraries of various sizes and types. The resulting report of a special committee of that organization is contained in the Appendix.

This report gives the recommendation of the California Library Association Committee with respect to three levels of college library service: a "two-year-level," a "five-year-level," and a "Ph.D.-level" library. As noted in the Appendix, the Costs Committee regards this report as a valuable and helpful statement, but it does not endorse or otherwise pass judgment on it.

Section IV

THE COST OF ESTABLISHING NEW INSTITUTIONS OF HIGHER EDUCATION AND EXPANDING EXISTING ONES

California must continue to create new institutions of higher education and to expand existing ones if it is to serve its rapidly expanding population and to provide its future citizens with educational opportunities equal to those now offered. The fact of tremendously expanding college enrollments is a matter of record; it is recognized by the general citizenry as well as by the professional educators of California. The State has built some new facilities but many more will be required in the decades closing out the twentieth century.

Some important and populous areas of the State have no publicly supported four-year institutions; the electorate in these areas is clamoring for the services such institutions can offer. Some existing institutions may be already too large for most effective operation but they are faced with projected growth far beyond their present levels. Some of them are not keeping pace with the demand of their constituency for the added classrooms, expanding curricula, and larger facilities necessitated by exploding population and a more complex society.

New Institutions Created Since World War II

The phenomenal increase in population and educational demand since World War II has led to the establishment of many new institutions of higher education in California, both public and private. All the public institutions have grown; many of the independent institutions have expanded; a few private colleges, including Pomona and Occidental, have put ceilings on their enrollments; and several new private colleges have been established.

Eight new state colleges have been created since 1948; they are Sacramento, Los Angeles, Long Beach, San Fernando Valley, Alameda County, North Bay Counties, Orange County, and Stanislaus County. The latter four are in early stages of development, but the other four are now well established, with enrollments and programs comparable to many older institutions in California and throughout the United States. Three of the older state colleges have established branch institutions called "residence centers" to meet demands and evident educational needs in previously unserved areas. San Francisco State operates one at Santa Rosa, Fresno State at Bakersfield, and San Diego State at El Centro. California State Polytechnic College has developed a branch institution near Pomona; the infant institution is growing at a rapid rate and promises to surpass the parent institution in enrollment within the next decade. Each state college is planning and carrying on continuous construction to house its constantly expanding enrollments and programs.

The University growth during this same period has required the expansion of facilities and programs. The University campuses at Davis and Riverside were first expanded to include full undergraduate programs and then to include graduate work in letters and science, where previously only programs in agriculture and related research were available. The campus at Santa Barbara has similarly been expanded to accommodate a total university program. The University has begun the conversion of the La Jolla campus in San Diego County to a full university program with an initial development emphasizing science and engineering.

Parallel enrollment increases and program demands have also led to the establishment of ten junior colleges in the decade between 1949 and 1959; they are Los Angeles Harbor College, Contra Costa College, Los Angeles Metropolitan College of Business, Shasta College, Oakland City College, American River College, Cerritos College, Foothill College, Coachella Valley College, and Diablo Valley College. The development of these new institutions has eased but not solved the problem on the junior college level. The new capacities, in fact, have scarcely begun to keep pace with California's burgeoning growth that has added some six or seven million people in the period between the close of World War II and 1959. Present junior college facilities are inadequate to meet the demands of the next decade.

There are times when some people wish that a moratorium might be declared on the construction or expansion of facilities for higher education, but periods when such action could be taken have been infrequent in national history and almost nonexistent in California.

Population has been growing, societal complexity increasing, and educational demands expanding. The *Restudy*, published in 1955, recommended, and the two governing boards approved, that

> No new state colleges and no new campuses of the University be established before 1965 and that the potential enrollment be cared for by expanding the facilities of the present institutions.[1]

This proposal was not feasible, and the State Legislature authorized a number of exceptions. New institutions have been created and a continuous clamor has been heard for more and more.

Studies of [illegible] Need for More State College and University Campuses

Bills designed to create new state colleges have been introduced in every recent session of the California Legislature. The Regents of the University have similarly been under constant pressure for the establishment of new campuses. Both the state colleges and the University have been faced with demands for expanded services, and in each session of the Legislature the number of appeals for authorization or budgetary support has increased. In 1955, bills proposing the establishment of nineteen new state colleges were introduced. None of these bills was enacted into law, but at least fifteen resolutions were passed providing for studies of the needs of higher education in particular areas of California. In many instances they were duplicatory and overlapping.

The State Board of Education and The Regents of the University, desiring orderly expansion of higher education facilities in the State, requested the Joint Staff of the Liaison Committee to propose a systematic study of the over-all problem. The Joint Staff, with the advice of its Technical Advisory Committee, studied the problem and proposed recommendations through appropriate channels, ultimately to be approved by the State Board of Education and The Regents of the University. The recommendations provided for study

> . . . of the advantages to the state of an orderly and high-level approach to the establishing of new centers of higher education in the state . . . and a priority list . . . which would show enrollment potentials and the order in which new institutions may be needed in the several areas of the state.[2]

The ensuing study was published in 1957.

This study was a comprehensive survey of the problem; it reviewed and analyzed population and enrollment statistics and trends and it estimated the relative needs for new junior college, state college, and University campuses. Some fourteen possible new junior colleges were discussed. The study assumed that adequate junior college facilities would be provided prior to the establishment of either a new state college or a new University campus in the area. Thirteen county or joint-county areas were listed in priority order for possible new state colleges. Five sections of the state were similarly listed for possible new University campuses.

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[1] McConnell, Holy, and Semans, *op. cit.*, p. 47.

[2] *A Study of the Need for Additional Centers of Public Higher Education in California.* Sacramento, California State Department of Education, 1957, pp. 2-3.

The Joint Staff made no recommendations. They called attention to the fact that their study and priority lists were based entirely on estimated enrollment projections and that other, possibly more important, considerations of State policy must be taken into account. Though no recommendations were made, several conclusions of guiding principle were approved in slightly varying wording by the two boards.

> If the State of California wishes to offer its future citizens of collegiate age a measure of educational opportunity equal to that now offered and an educational program of similar scope and quality as that now enjoyed by those in that age group, then local areas must establish more junior colleges and the State must provide additional state college and University facilities. . . .
>
> If increased facilities should be sought through the establishment of new campuses, such action should not be permitted to retard in any way the operation and suitable development of existing state college and University campuses. . . .
>
> The interest of the State, both educationally and financially, will best be served if such new institutions . . . are established in descending order of estimated enrollments. . . .
>
> . . . active encouragement be given by the . . . appropriate agencies to the establishment of new junior colleges in populous areas with adequate resources not now adequately served.
>
> . . . all possibilities for accommodating these enrollments should be carefully explored. [These include] better use of the physical plants; more careful planning of room sizes in relation to class sizes; reduction in the number of small classes; re-examination of the relative amounts of laboratory and nonlaboratory instruction in the various subject fields; and the experimental programs in the use of educational television as a means of instruction. . . .
>
> Constant review . . . of the estimated college enrollments, as well as . . . consideration of the effects of legislative policies and actions. . . .[8]

Actions by the 1957 Legislature: More New State Colleges Created

The 1957 Legislature also received a large number of bills for the establishment of new state colleges and four such institutions were created. One of the new colleges was designed to serve southern Alameda County and to relieve some of the enrollment pressure on San Jose State and San Francisco State. Another was designed to meet the needs in rapidly expanding Orange County. Its site has been established near the city of Fullerton. Both institutions began limited operations, designed principally for teacher education, in temporary facilities in the fall of 1959. The third new state college was designed to meet educational needs in and adjacent to Stanislaus County. It has recently been located a few miles north of Turlock but has not as yet begun to function. The fourth new state college has been recently located in the vicinity of Cotati in Sonoma County.

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[8] California State Department of Education, *op. cit.*, pp. 109-110.

Demands have been placed continuously on the Legislature and the Board of Regents for further action along the lines suggested by the 1957 *Additional Centers Study*. Residents of each of the areas identified in, or inferred from, that study have exerted pressure through various agencies, including chambers of commerce and other representative organizations, to stimulate action for their particular area. The 1959 Legislature again received many bills to create new state colleges. Similarly, The Regents have received appeals from various areas of the State and have been continuously attentive to the demand and need for additional University campuses and programs. They have announced intentions to expand the present institutions at Davis, La Jolla, Riverside, and Santa Barbara to full status as University campuses and to establish two new campuses, one to serve the Southeast Los Angeles-Orange County area and the other to serve the South Central Coast Section.

Need for More Junior Colleges

California has in operation sixty-three public junior colleges, a greater number than any other state in the nation. These institutions carry a significant portion of the responsibility of public higher education in California. They have made higher education available to many students whose education would have ceased with high school graduation had the local college not existed. Every indication points to their further development and to substantial increases in their enrollments.

The State Department of Education, through its Bureau of Junior College Education and its Bureau of School District Reorganization, has studied the junior college problem and worked closely with the various areas of the State in surveying their needs. The Department recently published a document, *California Public Junior Colleges*,[4] which reviews the historical development of these unique institutions, describes their present status, and forecasts their future developments. The document points out that the period from the close of World War II to 1957 has become known as the expansion period of the junior college movement in California. The expansion still continues. The document states that

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[4] *California Public Junior Colleges*. Sacramento, California State Department of Education, Bulletin, February 1958.

> . . . it may justifiably be predicted that during the next half century nearly complete coverage of the State will occur and that the current trend toward larger junior college districts and increasingly comprehensive programs will become more and more pronounced.[5]

In 1957, the State Department of Education made a report to a legislative subcommittee on education entitled, *The Junior College System: The Current Situation and Future Needs.*[6] During the sixteen months preceding its publication, according to the report, ten State-sponsored surveys either had been made or were in progress. These surveys were conducted under the direction of the State Department of Education. In each instance, the objective was to determine the feasibility of creating a new junior college district. Since 1957, three of the ten areas studied have been legally created as new junior college administrative units; they are the Foothill Junior College District in Santa Clara County, Siskiyou Junior College District in Siskiyou County, and Santa Cruz Junior College District.

The 1957 report further indicates that 67 per cent of the high school average daily attendance of the State was then included within the boundaries of districts maintaining junior colleges and that 28 per cent of the high school average daily attendance was considered to be in territory where the establishment of a new junior college district or the construction of a new junior college was needed. Only 5 per cent of the high school average daily attendance was in areas where affiliating with existing or new junior college districts or institutions did not seem feasible or necessary.

Local surveys of the need for junior colleges are continuously in progress. Without doubt, more new districts will be organized and additional institutions created within the next few years. The trend will be further accelerated if the Legislature withholds approval of new four-year institutions until the area in question is adequately provided with junior college facilities. The Legislature seems to be increasingly aware that local school districts in some areas of the State support the thirteenth- and fourteenth-grade education, whereas in others responsibility has either not been met at all or has been assumed by the State. Every indication again is that the physical, human, and political pressures during the next decade will witness the demand for new junior college districts and institutions and the expansion of existing ones.

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[5] *Ibid.*, p. 73.

[6] *The Junior College System: The Current Situation and Future Needs*, A Report to the Subcommittee on Education of the Assembly Ways and Means Committee. Sacramento, California State Department of Education, March 15, 1957. (Mimeo.)

Costs of New Junior College Campuses

The Committee undertook two studies of the cost of developing new junior college campuses. One study was based on data from seven recently completed junior college plants; the other, on the judgments of fifty-three junior college administrators as to the expenditure requirements for hypothetical new campuses of specified sizes. The purpose in both cases was to arrive at estimates that could be used in estimating the costs of additional new junior college facilities throughout the State in the years ahead. In both studies the data were compiled separately for the various components of a campus, for land acquisition, building construction, professional services, equipment, and site development. The judgments of the administrators produced results almost exactly the same as the figures developed from the entirely separate study of actual expenditures of selected existing institutions.

Costs of Seven Typical New Junior College Campuses. Table 19 presents the costs (in 1958 dollars) of seven selected junior colleges that have established new campuses within the past ten years, as follows: American River (in North Sacramento); Antelope Valley (in Lancaster); Bakersfield; Cerritos (in Norwalk); Chaffey (in Ontario); Coalinga; and Reedley. These seven institutions represent a cross section of California junior colleges and are believed to be a valid sample of new junior college plants across the State. The seven institutions vary in size from small, with 800 ADA (average daily attendance), to comparatively large, with 3,500 ADA, in terms of capacity. They are located in different types of communities. Reedley and Coalinga, for example, are rural; Bakersfield and Cerritos are urban. The buildings are almost uniformly one story but are of different structural types, ranging from heavy, fire-resistive construction (Type 1) at Antelope Valley, to light frame, non-fire-resistive buildings (Type 5) at Reedley.

The cost data for the seven institutions, as shown in Table 19, probably tend to be low. In each case the buildings included on the campus constitute something less than a complete plant. Stadiums and residence halls have been excluded from these data; such facilities are not typically a part of a California junior college campus, although

TABLE 19

SUMMARY OF NEW-CAMPUS CAPITAL-OUTLAY DATA, EXISTING JUNIOR COLLEGES, EXCLUDING RESIDENCE HALLS AND STADIUMS, ADJUSTED TO 1958 COST INDEX

Institution (With Computed Capacity)	Type of Outlay	Building Space			Capital Outlay (1958 Cost Index)		Total Project Cost Per Sq. Ft.		Per ADA		Per FTE Student		
		Assignable Sq. Ft.	Gross Sq. Ft.	ASF % of GSF	Total Project[1]	Equip. as % of Bldg.[2]	Assignable	Gross	Gross Sq. Ft.	Total Cost	Assignable Sq. Ft.	Gross Sq. Ft.	Total Project Cost
		1	2	3	4	5	6	7	8	9	10	11	12
American River[3].	Building projects.	165,740	230,046	72	$5,457,998	18	$32.90	$23.70	74	$1,760	80	111	$2,640
3,100 ADA, 2,070 FTE[4]. . . .	Total development[5]. . . .	165,740	230,046	72	6,329,461	18	38.20	27.50	74	2,040	80	111	3,060
Antelope Valley[6].	Building projects.	171,752	226,328	76	6,246,697	8	36.40	27.60	91	2,500	103	136	3,740
2,500 ADA, 1,670 FTE[4]. . . .	Total development[5]. . . .	171,752	226,328	76	8,317,299	8	48.40	36.70	91	3,330	103	136	4,980
Bakersfield[7].	Building projects.	266,051	398,700	67	8,556,240	6	32.20	21.50	114	2,440	114	171	3,670
3,500 ADA, 2,330 FTE[4]. . . .	Total development[5]. . . .	266,051	398,700	67	10,015,649	6	37.60	25.10	114	2,860	114	171	4,300
Cerritos[8].	Building projects.	245,000	303,353	81	6,282,121	14	25.60	20.70	101	2,090	123	152	3,140
3,000 ADA, 2,000 FTE[4]. . . .	Total development[5]. . . .	245,000	303,353	81	8,239,320	14	33.60	27.20	101	2,750	123	152	4,120
Chaffey[8].	Building projects.	172,504	251,204	69	5,011,684	17	29.10	20.00	84	1,670	86	126	2,510
3,000 ADA, 2,000 FTE[4]. . . .	Total development[5]. . . .	172,504	251,204	69	7,062,003	17	40.90	28.10	84	2,350	86	126	3,530
Coalinga[9].	Building projects.	64,896	76,836	84	2,097,327	5	32.30	27.30	96	2,620	122	145	3,960
800 ADA, 530 FTE[4].	Total development[5] [11]. .	64,896	76,836	84	2,304,825	5	35.50	30.00	96	2,880	122	145	4,350
Reedley[10].	Building projects.	69,459	82,197	85	1,984,950	29	28.60	24.10	87	2,090	110	130	3,150
950 ADA, 630 FTE[4].	Total development[5]. . . .	69,459	82,197	85	2,639,984	29	38.00	32.10	87	2,780	110	130	4,190
Total, Seven Campuses.	Building projects.	1,155,402	1,568,664	74	35,637,017	12	30.80	22.70	93	2,110	103	140	3,170
16,850 ADA, 11,230 FTE[4]. .	Total development. . . .	1,155,402	1,568,664	74	44,908,541	12	38.90	28.60	93	2,670	103	140	4,000
Independently Selected Medians.	Building projects.	. . . .	. . . .	76	. . . .	14	32.20	23.70	91	2,090	110	136	3,150
	Total development. . . .	. . . .	. . . .	76	. . . .	14	38.00	28.10	91	2,780	110	136	4,190

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[1] Building-projects figures include equipment, architects' fees, and all other costs related to buildings. Total-development figures include physical education fields and courts; roads, walks, and parking; primary utilities; general site development; and land acquisition. (See also footnotes [5], [11].)

[2] Equipment cost as percentage of *all other* building-project costs, *not* as percentage of column 4.

[3] Entirely one-story buildings of "Type 3" construction ("Type III," as defined by *Uniform Building Code*).

[4] ADA capacity as reported by source of data; FTE-student capacity then computed as two-thirds of ADA capacity on basis of State-wide average of 20 SCH (student credit hours per year) per ADA in 1957-58 and 30 SCH per FTE student.

[5] Land-acquisition costs (purchase only) included in following amounts: $380,517 (acreage not reported) at American River; $338,000 for 110 acres at Antelope Valley; $375,000 (acreage not reported) at Bakersfield; $1,074,050 (acreage not reported) at Cerritos; $500,000 for 209 acres at Chaffey; $82,498 for 42 acres at Coalinga; and $256,175 for 90 acres at Reedley.

[6] Principally "Type 1" construction ("Type I," as defined by *Uniform Building Code*); number of floors not reported.

[7] One-story buildings of "Type 1" and "Type 3" construction, except gymnasium of "Type 1" construction and partially two stories.

[8] Type of construction and number of floors not reported.

[9] One-story buildings of "Type 1" and "Type 3" construction.

[10] One-story buildings, almost entirely "Type 5" construction ("Type V," as defined by *Uniform Building Code*).

[11] Does not include physical education fields and courts (used jointly with high school).

NOTE: Each figure in columns 6 and 7 rounded to nearest $0.10; each figure in columns 9 and 12 rounded to nearest $10.

SOURCE: Special report (including worksheets) prepared by Daniel B. Milliken, President, Chaffey College, for Technical Committee on Costs.

two of the seven institutions (Bakersfield and Coalinga) do operate residence halls and at least two of them (Bakersfield and Cerritos) have excellent stadiums.

The capital cost of these seven campuses in 1958 dollars ranges from $2,300,000 in the case of Coalinga to more than $10,000,000 in the case of Bakersfield; the total cost per gross square foot of building space, including site acquisition and development, ranges from $25.10 at Bakersfield to $36.70 at Antelope Valley. The total capital outlay per unit of average daily attendance, (ADA), based on the estimated capacity of each campus, ranges from $2,040 to $3,330. Other detailed facts are shown in Table 19. Despite the variations in sizes and types of campuses, the costs are relatively uniform.

Estimated Cost of a Hypothetical New Junior College Campus. Table 20 presents the estimated cost of junior college campuses of three sizes, as developed by a "consensus analysis" by fifty-three junior college administrators, arranged with the cooperation of the California Junior College Association. Eighteen administrators pooled their judgment in estimating the costs for a campus of 2,000 ADA; twenty-one on the cost for a campus of 4,000 ADA; and fourteen for a campus of 8,000 ADA. The table reflects the combined judgment of the "accredited jury" and shows in detail the costs of the various components that go to make up an entire campus. The campus of 2,000 ADA assumes a site of 100 acres, whereas a campus of 4,000 ADA assumes 125 acres, and of 8,000 ADA, 180 acres. The buildings on the campus represent 112 square feet of gross floor space per ADA in the case of the smallest campus, 97 for a medium-sized campus, and 88 for the largest campus. Other detail may be noted in the table. The total estimated costs of these three sizes of plants, as shown, are $6,274,300 for a campus with a capacity of 2,000 ADA, $10,520,900 for a campus of 4,000 ADA, and $18,992,000 for a campus of 8,000 ADA.

Although the studies were made independently, they show considerable agreement between the actual costs of the seven campuses as shown in Table 19 and the consensus analyses in Table 20. Despite the fact that they tend to be low, however, the historical data on actual costs exceed the estimates made by the accredited jury. This phenomenon is not unusual. In general, people believe that costs of construction are somewhat lower than they actually prove to be in practice. For example, laymen often overlook the fact that the costs of a newly completed building generally represent the cost-index of the time when the contract was awarded, not that of the present. This normal human failing probably was a factor influencing the estimates of the administrators whose judgments were pooled.

TABLE 20

A CONSENSUS ANALYSIS OF CAMPUS COSTS, CALIFORNIA JUNIOR COLLEGES

(1958 Dollars)

Size of Campus	No. of Acres	Cost Per Acre	Site Cost	Site Development	Buildings			Professional Services	Equipment	Total Plant	Total Cost Per ADA
					Gross Sq. Ft.	Cost Per Gross Sq. Ft.	Building Cost				
	1	2	3	4	5	6	7	8	9	10	11
2,000-ADA[1]............	100	$5,500	$550,000	$922,700	223,700 (112 per ADA)	$17.78	$3,977,000	$362,300	$462,300	$6,274,300	$3,137
4,000-ADA[2]............	125	7,350	919,000	1,316,000	387,000 (97 per ADA)	17.70	6,849,900	601,000	835,000	10,520,900	2,630
8,000-ADA[3]............	180	7,200	1,296,000	1,677,000	707,000 (88 per ADA)	18.74	13,249,000	1,200,000	1,570,000	18,992,000	2,374

[1] Consensus average of eighteen junior-college administrators.

[2] Consensus average of twenty-one junior-college administrators.

[3] Consensus average of fourteen junior-college administrators.

NOTE: The sum of columns 7, 8, and 9 of this table corresponds to the building-projects figure in column 4 of Table 19; column 6 of this table is therefore not comparable with column 7 of Table 19. Columns 10 and 11 of this table correspond to the total-development figures in columns 4 and 9, respectively, of Table 19.

SOURCE: An opinionnaire circulated to all California junior colleges by Daniel B. Milliken, President, Chaffey College.

The actual expenditures for initial complements of equipment averaged about 12 per cent of all other building-project expenditures, including those for architectural fees and other professional services. The corresponding consensus analysis yielded a figure of 11 per cent. Similarly, in terms of the cost per gross square foot of building space, the 1958 dollar equivalents of the actual total project costs were slightly higher than those reflected in the judgments.

In the light of the above two studies and their findings, as shown in Tables 19 and 20, the Committee, after careful analysis of the various influencing factors and the data on several measures of cost, concluded that a typical junior college plant costs (in terms of 1958 dollars) approximately $3,200 per ADA for a campus with a capacity of 2,000 ADA, $2,800 for a campus of 4,000 ADA, and $2,500 for a campus of 8,000 ADA. These rounded figures, converted into total campus costs, are as follows:

Size of Campus	1958 Cost Per ADA	Total 1958 Cost
2,000-ADA Campus	$3,200	$6,400,000
4,000-ADA Campus	2,800	11,200,000
8,000-ADA Campus	2,500	20,000,000

Costs of New State College and University Campuses

To develop estimates of the cost of constructing new campuses for state colleges or for the University, data were gathered from six California institutions where new campuses, largely if not wholly of permanent buildings, have been developed during the past decade. Unfortunately, only one University campus, Riverside, falls in this category. However, the new facilities for the College of Letters and Science at Riverside were constructed in accordance with the building standards that are uniformly applied to all University campuses. Thus, the costs to date of the College of Letters and Science at Riverside may be regarded as typical of University construction in general, exclusive of graduate student facilities and of research facilities beyond those of the teaching staff.

Five state colleges have constructed completely new campuses within the past ten years. Complete data on costs were available from the following institutions: Fresno State, Long Beach State, Los Angeles State, Sacramento State, and San Francisco State. Expenditure data on construction of all the facilities at these newly established state college campuses were obtained from the institutions and were reviewed for completeness and for full-time student capacities by the Planning Division of the State Department of Education.

Table 21 presents in summary the capital outlay data for each of these several campuses. This table groups the projects of each institution by nonresidential buildings; residential buildings (residence halls and cafeterias); and total development, including nonbuilding projects (principally site development and primary utilities). It also shows for each of the six campuses the amount of building space, the total cost (adjusted to 1958 construction costs), the costs per square foot of space, and the cost per full-time student.

Table 22 analyzes the costs of Type 1 (first-class, fire-resistive) construction for particular kinds of buildings within the six institutions under study. The floor areas and the costs per square foot are in terms of both *gross* and *assignable* space. The latter excludes the square-footage (but not the cost) of corridors, stairs, and all other building-service areas, as well as all walls and partitions. To examine building project costs in these terms is not customary; however, the Committee believes that such analyses are more revealing and significant for this purpose than are those based on gross floor areas, for only the assignable floor area of a building directly houses the institution's operations and serves its functions.

In some instances the unit costs of corresponding buildings are considerably different from each other; in other instances they are remarkably uniform. For example, in terms of each campus' total of a given kind of building, four of the five total-project costs for science buildings are within the range of approximately $57 to $66 per assignable square foot. Perhaps the most noteworthy feature of all these data is the narrow range of the total costs of residence halls and cafeterias per student housed—i.e., $6,379 to $6,998, with four of the five figures within less than $175 of the median, $6,553. (These "costs" represent total capital outlays, including loan funds.)

Similar information is provided also for administration buildings, libraries, engineering and industrial arts buildings, fine arts buildings, social science and general classroom buildings, and gymnasiums. No consistent relationship exists either between the per-square-foot costs of the state colleges and those of the University or between those of one state college and those of another. Apparently the factors determining the cost of a particular building are too numerous and varied for simple analysis.

The Committee did not obtain sufficient data to determine accurately the possible variation of costs per square foot with increasing heights of buildings. Even with only minimum data, however, it is clear that the cost per *assignable* square foot generally increases when the number of floors increases, particularly from single-story to multi-story construction. This is true if only because of the increased need for such general-circulation space as corridors, stairs, and elevators. Furthermore, although the data available to this Committee were not sufficient to be conclusive, the cost per assignable square foot apparently may be greater for a larger building than for a smaller one of the same number of floors. Even in one-story construction, the cost of the larger building's greater relative amount of general-circulation and other building-service areas may more than offset any "economies of size." Comparisons are, however, difficult to draw accurately, since smaller buildings—particularly one-story ones—tend to be of the less expensive structural types that are neither feasible nor legally permissible for large multi-story buildings. And as a further complication, even the arithmetic of computing a building's gross floor area becomes uncertain as varying fractional factors are applied by different persons to the "overhangs" and partially enclosed areas that are becoming increasingly characteristic of modern buildings. All these factors complicate, if not preclude, any accurate comparison of the per-square-foot costs of junior college, state college, and University buildings.

The purpose of this analysis, as was true for the study of junior college construction costs, was the development of data that would permit estimating the expenditure required for the construction of new facilities on new state college and University campuses. Relating these various costs to numbers of students is essential to the development of estimates for campuses of various sizes of student bodies. In the case of the state colleges and the University, three different sizes—different from those used for junior colleges—were established, as follows: 5,000, 10,000, and 20,000 full-time students. (*Note.* The term "full-time student"—one taking 12 or more units—is a different measure from the one used in the case of the junior colleges.)

Analysis of the data in Tables 21 and 22 made possible the determination of costs per full-time student for both state college and University campuses by size of institution (5,000, 10,000, and 20,000) and for varying percentages of students housed in the campus residence halls.

These figures, presented in Table 23, show, for example, that in a state college of 5,000 full-time students, the net capital outlay of State funds, *in relation to* the number of full-time students where 10 per cent of the full-time student body is provided with residence halls, is $4,835 per full-time student in terms of 1958 construction cost levels. For a campus of the University with the same size student

TABLE 21

SUMMARY OF NEW-CAMPUS CAPITAL-OUTLAY DATA, EXISTING STATE COLLEGE AND UNIVERSITY OF CALIFORNIA CAMPUSES, INCLUDING RESIDENCE HALLS, ADJUSTED TO 1958 COST INDEX[1]

(Campuses consisting largely or wholly of "Type 1" buildings)[2]

Institution With Computed Capacity)	Type of Project	Building Space			Capital Outlay (1958 Cost Index)			Total Project Cost Per Sq. Ft.[3]		Per Full-Time Student		
		Assignable Sq. Ft.	Gross Sq. Ft.	ASF % of GSF	% Type 1[4]	Total Project[5]	Equip. as % of Bldg.[6]	Assign-able	Gross	Assign-able Sq. Ft.	Gross Sq. Ft.	Total Project Cost[3]
		1	2	3	4	5	6	7	8	9	10	11
Fresno State College........ 6,000 full-time students[7]	Nonres. bldgs........	623,514	840,901	74	67	$23,842,200	16	$38.20	$28.40	104	140	$3,970
	(Excl. farm)..........	(457,514)	(673,715)	(68)	(88)	....	....	....	....	(76)	(112)	....
	Res. bldgs...........	100,101	154,800	65	71	3,827,100	9	38.20	24.20	17	26	640
	Total development....	723,615	995,701	73	68	33,006,100	15	45.60	33.10	121	166	5,500
	(Excl. farm)..........	(557,615)	(828,515)	(67)	(85)	....	....	....	....	(93)	(138)	....
Long Beach State College... 8,276 full-time students[7]	Nonres. bldgs........	641,308	818,942	78	86	25,461,400	14	39.70	31.10	77	99	3,080
	Res. bldgs...........	80,808	113,136	71	100	2,799,000	9	34.60	24.70	10	14	340
	Total development....	722,116	932,078	77	87	32,186,800	14	44.60	34.50	87	113	3,890
Los Angeles State College... 7,081 full-time students[7]	Nonres. bldgs........	636,947	1,004,005	63	96	23,560,000	16	37.00	23.50	90	142	3,330
	Res. bldgs...........	26,176	31,728	83	100	1,085,200	15	41.50	34.20	4	4	150
	Total development....	663,123	1,035,733	64	96	26,761,800	16	40.40	25.80	94	146	3,780
Sacramento State College.... 3,562 full-time students[7]	Nonres. bldgs........	383,850	518,460	74	46	15,481,200	25	40.30	29.90	108	146	4,350
	Res. bldgs...........	122,500	161,500	76	100	3,887,700	11	31.70	24.10	34	45	1,090
	Total development....	506,350	679,960	74	59	22,168,500	22	43.80	32.60	142	191	6,220
San Francisco State College.. 5,969 full-time students[7]	Nonres. bldgs........	551,169	904,047	61	100	22,613,750	14	41.00	25.00	92	152	3,790
	Res. bldgs...........	113,420	181,501	62	100	5,367,700	8	47.30	29.60	19	30	900
	Total development....	664,589	1,085,548	61	100	30,408,350	13	45.80	28.00	111	182	5,090
Univ. of Calif. at Riverside (Letters and Science only)... 1,916 full-time students[7]	Nonres. bldgs........	255,795	386,180	66	83	13,019,200	15	50.90	33.70	133	202	6,790
	Res. bldgs...........	118,258	192,000	62	97	5,242,700	8	44.30	27.30	62	100	2,740
	Total development....	374,053	578,180	65	88	21,244,300	13	56.80	36.70	195	302	11,090
Six Campuses, Total........ 32,804 full-time students[7]	Nonres. bldgs........	3,092,583	4,472,535	69	82	123,977,750	16	40.10	27.70	94	136	3,780
	Res. bldgs...........	561,263	834,665	67	94	22,209,400	9	39.60	26.60	17	26	680
	Total development....	3,656,846	5,307,200	69	83	165,775,850	15	45.30	31.20	111	162	5,050
Independently Selected Medians..................	Nonres. bldgs........	....	....	70	84	....	16	40.00	29.20	98	144	3,880
	Res. bldgs...........	....	....	68	100	....	9	39.80	26.00	18	28	770
	Total development....	....	....	69	88	....	15	45.10	32.80	116	174	5,300

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[1] Including total costs of projects with at least working drawings funded in 1959-1960.

[2] First-class, fire-resistive construction, as defined for the first of the categories with Roman-numeral designations in the *Uniform Building Code*, International Conference of Building Officials, Los Angeles, California, 1958.

[3] Total-development figures include all site-development costs referred to in footnote [5].

[4] Percentage based on assignable floor areas.

[5] Amounts listed for buildings include equipment, fees, and all other costs related to the building projects. Total-development amounts include physical education fields and courts, roads, walks, and parking, general site development, and land acquisition (except as noted), as follows: $5,336,800 at Fresno, $3,926,400 at Long Beach, $2,116,600 (excluding land acquisition) at Los Angeles, $2,799,600 at Sacramento, $2,426,900 (parking garage only) at San Francisco, and $2,982,400 (excluding land acquisition) at Riverside. (Included land costs could not be segregated.)

[6] Equipment cost as percentage of *all other* building-project costs, *not* as percentage of column 5.

[7] As reported by Department of Education for state colleges, and by University's Office of Architects and Engineers for Riverside. (Ratio of full-time students to FTE students based on fall 1958.)

SOURCE: Special reports by institutions to Technical Committee on Costs.

TABLE 22

COMPARISON OF BUILDING PROJECT COSTS PER SQUARE FOOT AT NEW CAMPUSES, STATE COLLEGES AND UNIVERSITY OF CALIFORNIA

(Buildings of "Type 1" Construction[1])

Type of Building and Institution	Assignable Square Feet[2]		No. of Floors	Total 1958 Cost[3] Per Gross Sq. Ft.	1958 Cost Per Assignable Square Foot[3]		
	No.	% of Gross			Building[4]	Equip-ment	Total Project
	1	2	3	4	5	6	7
Administration							
Fresno State.........	12,483	54	1	$35.14	$52.86	$12.63	$65.49
Long Beach State[5]...	10,320	68	2	34.64[6]	50.75	(not reported)	
Los Angeles State....	28,319	61	1 & 2	24.64	35.86	4.61	40.47
Sacramento State....	23,870	58	2	27.24	42.51	4.15	46.66
San Francisco State..	31,167	57	3	28.39	47.10	2.72	49.82
UC—Riverside.......	23,000	56	4	34.88	59.21	2.96	62.17
Independently Selected Medians....	......	..	.....	31.52	.....	.....	50.29
Libraries							
Fresno State.........	38,735	75	2	20.59	23.82	3.81	27.63
Long Beach State[7]...	80,812	88	1 & 3	19.78	20.37	2.12	22.49
Los Angeles State....	70,824	80	4	15.95	16.06	3.76	19.82
Sacramento State....	64,700	77	2 & 3	23.55	27.76	2.88	30.64
San Francisco State..	109,179	70	3 & 4	17.36	20.99	3.71	24.70
UC—Riverside.......	29,991	77	2	26.57	31.28	3.15	34.43
Independently Selected Medians....	......	..	.....	20.19	.....	.....	26.17
Science							
Fresno State.........	63,830	65	2	42.99	60.36	5.77	66.13
Long Beach State....	211,374	81	2 & 3	34.98	34.75	8.35	43.10
Los Angeles State....	74,790	60	3	34.98	44.86	13.82	58.68
Sacramento State....	......	..	.....	.....	.....	.....	.....
San Francisco State..	69,343	57	2 & 3	32.04	39.86	16.83	56.69
UC—Riverside.......	82,917	61	2 & 3	37.80[8]	52.30	9.89[8]	62.19[8]
Independently Selected Medians....	......	..	.....	34.98	.....	.....	58.68
Engineering and Industrial Arts							
Fresno State[9]........	45,090	65	1 & 2	28.99	34.74	9.80	44.54
Long Beach State[5]...	20,332	94	1 & 3	76.91[6]	81.64	(not reported)	
Los Angeles State....	56,785	77	2 & 3	36.74	35.59	12.25	47.84
Sacramento State[10]...	50,800	77	1	47.89	29.02	33.48	62.50
San Francisco State..	......	..	.....	.....	.....	.....	.....
UC—Riverside.......	......	..	.....	.....	.....	.....	.....
Independently Selected Medians....	......	..	.....	42.32	.....	.....	55.17

(Continued on next page)

TABLE 22—CONTINUED

COMPARISON OF BUILDING PROJECT COSTS PER SQUARE FOOT—(CONT.)

Type of Building and Institution	Assignable Square Feet[2]		No. of Floors	Total 1958 Cost[3] Per Gross Sq. Ft.	1958 Cost Per Assignable Square Foot[3]		
	No.	% of Gross			Building[4]	Equip- ment	Total Project
	1	2	3	4	5	6	7
Fine Arts							
Fresno State.........	80,942	63	1 & 3	$33.58	$45.23	$7.94	$53.17
Long Beach State[5,7]..	86,719	69	2 & 3	26.65[6]	36.08	(incomp.	data)
Los Angeles State....	134,998	63	1 to 3	19.18	25.92	4.45	30.38
Sacramento State[5]...	18,650	64	2	40.94	57.96	5.91	63.61
San Francisco State[5].	101,859	55	1 & 2	31.71	52.54	4.75	57.29
UC—Riverside.......	......	..	.....	.....	.....	.....	.....
Independently Selected Medians....	......	..	.....	31.71	.....	.....	53.17
Social Science, General Classroom, and Office							
Fresno State.........	58,199	59	2	23.60	35.06	4.79	39.85
Long Beach State[5,7]..	82,223	76	2 & 3	30.11	37.07	2.73	39.80
Los Angeles State....	166,666	67	5	24.00	33.00	3.00	36.00
Sacramento State....	......	..	.....	.....	.....	.....	.....
San Francisco State..	130,783	59	2 to 4	21.55	33.24	3.11	36.35
UC—Riverside.......	33,280	57	2	31.17[8]	46.97	7.38[8]	54.35[8]
Independently Selected Medians....	......	..	.....	24.00	.....	.....	39.80
Gymnasiums							
Fresno State.........	76,462	75	1	27.64	35.01	1.84	36.85
Long Beach State[7]...	44,768	77	1	30.79	39.44	0.38	39.82
Los Angeles State....	73,180	67	2	23.02	32.97	1.17	23.02
Sacramento State	70,570	88	1	27.72	29.81	1.73	31.54
San Francisco State..	85,274	61	1 & 2	22.72	35.55	1.64	37.19
UC—Riverside.......	44,050	73	2	32.16[8]	38.70	5.38[8]	44.50[8]
Independently Selected Medians....	......	..	.....	27.68	.....	.....	37.02
Residence Halls and Cafeterias[11]							
Fresno State[12].......	100,101	65	1 to 3	24.72	35.07	3.16	38.23
Long Beach State....	80,808	71	1 & 3	24.74	31.80	2.84	34.64
Los Angeles State[13]...	26,176	83	1	34.20	36.15	5.31	41.46
Sacramento State....	122,500	76	1 to 3	24.07	28.70	3.04	31.74
San Francisco State..	113,028	62	1 & 6	24.32	36.18	2.88	39.06
UC—Riverside[14].....	118,258	62	1 to 3	27.31	41.07	3.26	44.33
Independently Selected Medians.....	......	..	.....	24.72[15]	.....	.....	38.23[15]

(Footnotes on next page)

TABLE 22—CONTINUED

COMPARISON OF BUILDING PROJECT COSTS PER SQUARE FOOT—(CONT.)

[1] Types of construction as defined by the *Uniform Building Code*, International Conference of Building Officials, Los Angeles, California, 1958. There designated by Roman numerals but here designated by corresponding Arabic numerals, ranging from "Type 1" for the first-class, fire-resistive construction typically required for multi-story construction in No. 1 fire zones, to "Type 5" for combustible construction typified by light wood-frame buildings with sheathing as light as five-eighths-inch wood or five-sixteenths-inch plywood. This table confined to buildings of "Type 1" construction, except as indicated by other footnotes.

[2] Based on total floor areas of the one or more buildings of each category at each campus. Assignable square-footage is based on dimensions between principal wall surfaces of each room, excluding corridors, stairs, and other general-circulation areas, custodial, mechanical, and other building-service areas, and all walls and partitions. Gross square-footage is based on each building's over-all dimensions between principal exterior surfaces of outside walls.

[3] All costs adjusted to the late-1958 construction-cost index corresponding to that on which 1959-60 capital-outlay requests to the 1959 State Legislature were based. Total costs include equipment, fees, and all other costs related to the building project, including alterations but excluding any separately funded general-site-development projects. Columns 4 and 7 based on same total cost, except as indicated by footnote [6].

[4] All costs of the project, except those of initial complements of equipment (which are in column 6).

[5] Excluding other building(s) of this category but of construction entirely other than "Type 1."

[6] "Building" cost only, as in column 5. (See footnote [4].)

[7] Includes one of this institution's initial projects for which augmentation funds (not here included) were provided in amounts averaging, per assignable square foot, as follows for that entire group of initial buildings (in 1958 dollars as in columns 5-7): building cost, $7.08; equipment cost, $4.40; total cost, $11.48. The figures listed in columns 4-7 are therefore understatements to a degree depending on the proportionate effect of the one building on the total group here represented.

[8] Includes allocation of cost of initial complement of equipment, separately funded for the first buildings beyond the amounts reported as project costs.

[9] Includes a building partially of "Type 3" construction.

[10] Includes a building partially of "Type 5" construction.

[11] Includes total cafeteria facilities. Following are the numbers of students housed and the total 1958 costs (as for columns 4 and 7) per student housed, excluding Los Angeles State (see footnote[13]):

Fresno State	600 students	$6,379 per student
Long Beach State	400 students	$6,998 per student
Sacramento State	600 students	$6,480 per student
San Francisco State	800 students	$6,710 per student
UC—Riverside	800 students	$6,553 per student

[12] Includes cafeteria addition of "Type 4" construction.

[13] Cafeteria only. (No residence halls.)

[14] Includes small cafeteria converted from horse barn of "Type 5" construction.

[15] Excluding Los Angeles State.

SOURCE: Special report by each institution to Technical Committee on Costs, checked by State Department of Education as to inclusions and exclusions of projects in relation to computed capacities used elsewhere in this report, and by the University's Office of Architects and Engineers, in the cases of the state colleges and UC-Riverside, respectively.

body and the same percentage of students housed, the corresponding expenditure of State funds would be $7,825 as of 1958. If the percentage of students housed were increased to 25 per cent, the 1958 net costs per full-time student would be approximately $5,670 and $8,465, respectively.

The above figures, representing estimated net capital outlays of State funds required for new campuses, include such site development items as moderately extensive general utility systems, roads, walks, and landscaping, and the initial complements of equipment for the buildings. The data, however, did not include anything more

TABLE 23

New-Campus Capital Outlay Per Full-time Student, State Colleges and University of California

(Based on 1957-58 educational programs and 1958 construction costs)

Type and Size of Campus	Non-residential Capital Outlay[1]	Residential Capital Outlay Per 10% Housed		
		Total[2]	Loan[3]	Net
	1	2	3	4
State College				
5,000-student campus	$4,280	$750	$195	$555
10,000-student campus	4,050	750	195	555
20,000-student campus	3,750	750	195	555
University of California				
5,000-student campus	$7,400	$750	$325	$425
10,000-student campus	7,100	750	325	425
20,000-student campus	6,630	750	325	425

[1] Total project cost of nonresidential buildings, including equipment, plus 12 per cent for physical education fields and courts, primary utilities, roads and walks, and other general site development, but not including more than nominal land-acquisition cost. Not applicable to campuses with emphasis on agriculture, engineering, medical and health sciences, or technology.

[2] $6,500 per student housed, including dining facilities, plus 15 per cent for general site development as above.

[3] 50 per cent of cost of residential buildings, excluding dining facilities in the case of the state colleges, including dining facilities in the case of the University of California, and excluding general site development in both cases.

Source: Nonresidential floor areas based on Table 36, *Restudy of the Needs of California in Higher Education* (p. 352), as approximately confirmed by analysis of the data here summarized in Table 21; 1958 nonresidential-building costs estimated as an over-all average of $31 per gross square foot (total project cost, including equipment), based on analysis of data summarized in Table 22 indicating an over-all average of $49 per assignable square foot, with assignable floor area averaging 63 per cent of gross floor area. Residential-building costs per student housed, and relationship of site development and other nonbuilding costs to building costs, based on analysis of data summarized in Tables 21 and 22.

than very nominal site-acquisition costs. Where such costs for land are unusually high, the figures noted above will prove to be conservative. No allowance has been made for cost of such extraordinary items as parking structures or buildings that are much more—if any—than three stories high. Most important, no allowance has been made for any expansion of research or other public service activities beyond the State-recognized levels of 1957-58.

The above-per-student costs also exclude the part of the expense involved in constructing residence halls that would be repaid from income, as in the case of such living facilities recently constructed by the University and the state colleges. These "net-cost" figures are presented in Table 24. As previously mentioned, the assumption

TABLE 24

Net Capital Outlay for Three Sizes of State College and University Campuses

(Based on 1957-58 educational programs and 1958 construction costs)

Full-time Enrollment and Percentage Housed	State Colleges	University of California
	1	2
5,000 full-time students		
No students housed	$21,000,000	$37,000,000
10 per cent housed	24,000,000	39,000,000
25 per cent housed	28,000,000	42,000,000
10,000 full-time students		
No students housed	$41,000,000	$71,000,000
10 per cent housed	46,000,000	75,000,000
25 per cent housed	54,000,000	82,000,000
20,000 full-time students		
No students housed	$75,000,000	$133,000,000
10 per cent housed	86,000,000	141,000,000
25 per cent housed	103,000,000	154,000,000

Note:

1. Nonresidential figures represent total project costs, including equipment, at $31 per gross square foot, plus 12 per cent for physical education fields and courts, primary utilities, roads and walks, and other general site development but not including more than nominal land-acquisition cost. Not applicable to campuses with emphasis on agriculture, engineering, medical and health sciences, or technology.

2. Residential figures include student housing at $6,500 per student housed, including dining facilities, plus 15 per cent of student-housing costs for related general site development, *less* loan-fund financing assumed to be 50 per cent of cost of residential buildings, excluding dining facilities in the case of the state colleges, including dining facilities in the case of the University of California, and excluding general site development in both cases.

Source: Table 23.

throughout this study is the *status quo,* here including the difference between the recent fundings of dining facilities in the state colleges and the University.

Costs of Expanding Existing State College and University Campuses

Anyone familiar with the pattern of attendance growth at institutions of higher learning in California recognizes that all presently existing campuses will continue to expand, despite the fact that all three segments of public higher education are destined to create new campuses during the next decade. For this reason, the cost of expanding presently existing campuses should be studied, particularly with respect to the question of whether expansion of presently existing campuses costs more or less than the development of completely new institutions and facilities. Inevitably, this latter question will be raised. For these and other reasons, the Committee investigated the question of costs as related to the expansion of existing campuses.

After careful analysis the Committee concluded that the capital outlay requirements for expanding an existing campus generally will not be greatly different from those required for a new campus development, provided the percentage of students housed remains constant. An existing campus planned and built for a limit of 5,000 students will normally require about the same additional expenditures to accommodate 10,000 students as would be involved in providing the difference between the corresponding costs of a new campus designed for 10,000 students and one designed for 5,000.

The State's cost of expanding an existing campus, therefore, may be estimated for purposes of this study from the difference between the appropriate two figures in Table 24. For example, doubling the capacity of a 5,000-student state college campus with 10 per cent of its students continuing to be housed in residence halls can be estimated to require a "net" capital outlay of approximately $22,000,000 ($46,000,000, minus $24,000,000). Similarly, doubling the capacity of such a campus of the University can be determined to cost approximately $36,000,000 ($75,000,000, minus $39,000,000).

Cost Comparisons Between Constructing New State College and University Campuses and Expanding Old Ones

The foregoing cost estimates would have to be increased if the expansion of established campuses necessitated, for example, the acquisition of unusually expensive land or a change from buildings averaging two or three floors to buildings with significantly more floors. Except for the effect of such factors, the maintenance of a given percentage of students housed would appear to require, for every 5,000 full-time students, about $2,300,000 to $3,500,000 more capital outlay for a new state college campus than for the expansion of an existing one, and about $3,000,000 to $5,000,000 more for a new University campus. Differences of this magnitude could be offset, or more than offset, by the difference between the site-acquisition or high-rise-construction costs of expanding a crowded existing campus and the costs of establishing a new campus on a site where the available land is relatively inexpensive and lower buildings are feasible.

The expansion of an existing campus could, however, necessitate a considerable increase in the percentage of students housed in residence halls. Fewer campuses more widely dispersed would require a greater percentage of the students to live away from home, thus increasing the relative need for residence halls. The most logical choice might lie, therefore, between the establishment of new campuses with no increase in the percentage of students housed and the accelerated expansion of existing campuses with a considerable increase in the percentage housed.

For example, in the case of a 10,000-student state college with 10 per cent of the students housed in residence halls, Table 24 indicates that an expansion to 20,000 students with an increase in the percentage housed to 25 per cent would require a net capital outlay of approximately $57,000,000 ($103,000,000, minus $46,000,000). To accommodate the same total number of students by limiting the existing campus to an enrollment of 10,000 and housing for 10 per cent of the students, and by establishing two new 5,000-student campuses with 10 per cent housed, would require a net capital outlay of approximately $48,000,000, or approximately $9,000,000 less net capital outlay than for expansion of the existing campus. Alternatively, if the new-campus development consisted of a single 10,000-student campus with 10 per cent housed, the net capital outlay would be approximately $46,000,000, or approximately $11,000,000 less than for expansion of the existing campus.

The State might be faced with the same kind of choice in the case of the University. Expansion of a 10,000-student campus with 10 per cent of the students housed to a 20,000-student campus with 25 per cent housed would require a net capital outlay of approximately $79,000,000 ($154,000,000, minus $75,000,000). Development of two new 5,000-student campuses with 10 per cent housed would require approximately $78,000,000 in net capital outlay, or development of one new 10,000-student campus with 10 per cent housed would require approximately $75,000,000. This comparison indicates a difference of $1,000,000 to $4,000,000 in favor of the new-campus development, a difference that might be considerably increased by higher land-acquisition costs for the existing-campus expansion.

The Effect of Residence Halls on Costs

The choice of a basis on which to compare the estimated costs of expanding existing campuses and of developing new campuses is largely a matter of estimating the percentage of students to be housed in residence halls. With a constant percentage housed, the estimated cost of expanding an existing campus is comparatively so little less than that of developing a new campus that such factors as land costs could tip the scales either way. If, however, the alternative to new-campus development involves a significantly greater percentage of students housed on the expanded existing campus, then the difference in capital outlay generally is clearly in favor of the development of new campuses.

Comparison Between State College and University Costs

As noted earlier, the costs of constructing educational facilities are generally similar at the state colleges and the University in terms of costs per square foot of building space. Such differences as exist in the costs per student are the result almost exclusively of differences in the amounts and kinds of building space required for the various programs. Advanced graduate and other specialized work conducted in the University does require more space in relation to the number of students to provide for research and other specialized functions within the educational process.

The assumption on the part of some people that University campuses cost two or three times as much as state college campuses is generally not correct. The capital outlays involved could be as different as that, depending upon the projected student capacity, the percentage of students housed in residence halls, and such other factors as the extent of advanced graduate work involved, but it is not likely. In general, for a given number of students, the University's greater proportion of upper-division and graduate students and its emphasis on research and other specialized types of work require about 63 per cent more capital outlay where 10 per cent of the students are housed in residence halls. If the percentage of students thus housed is increased to 25 per cent, then about 50 per cent more capital outlay is required.

In practice, state college and University campuses will differ in many ways and according to widely varying circumstances. The differences in characteristics of students served, in educational programs involved, in total number of students ultimately to be accommodated, and in the percentage to be housed in residence halls may be so great as to make direct comparisons of total costs quite invalid.

Uncertain and Intangible Factors Involved in Predicting Costs of Expanded or New Institutions

Predictions of cost levels of public education are among the most uncertain of all projections. They depend upon accurate definitions of the programs to be financed and the numbers of students in the programs, as well as the cost-index level at any given date in the future. Even if one assumes, for the purpose of comparison with current costs, that the cost-index level will remain constant, many highly variable factors still remain that may affect the accuracy of the projection because they will inevitably affect the program itself. Therefore, any study that attempts to project costs of higher education should call the reader's attention to a number of these factors.

The Effect of Changes in "Student Mix." The Master Plan Survey Team proposes significant changes in the distribution of lower-division students among junior colleges, state colleges, and the University, in part as an expected result of concurrently proposed changes in the percentages of high-school graduates eligible for admission to the state colleges and the University. Any such diversion of lower-division students from the state colleges and the University will accelerate the growth of enrollments in the junior colleges and will increase the average per-student costs of the state colleges and the University because the relative amount of the more expensive upper-division and graduate instruction will then be greater than in the *status quo* projections on which this report is based. Also, entirely aside from any enforced change in the "student mix," other changes are inherent in the normal growth and development of the three segments of public higher education, as well as in that of the independent institutions.

Not even the measurable and predictable changes in "student mix" can be accurately evaluated in terms of their effect on costs. None of the operating expense or capital outlay data of the junior colleges were available to the Committee separately for transfer and terminal students. The Committee's capital outlay data of the state colleges and the University are largely undifferentiated as to academic levels of students and subject fields of instruction. Nevertheless, any significant change in the "student mix" of any one of the three segments of public higher education will obviously affect the total capital outlays estimated in the study, not only for each segment but also probably for all segments combined.

The Effect of Changes in Junior College Financing. The proposed diversion of students to the junior colleges may create a serious financial problem in the construction of junior college facilities. Local financing of junior college construction may prove to be inadequate. State grants-in-aid to junior colleges for construction are an obvious possibility. Such grants may prove necessary to provide classrooms and laboratories for the thousands of lower-division students who may be diverted from the state colleges and the University.

This prospect, like other uncertainties and intangibles inherent in the current situation, is enmeshed in arguments. The local communities, rather than the State, would then bear the major part of the operating expense related to the diverted students. One argument is that the State's savings in operating expense would be much greater than the cost to the State of assisting junior colleges with their capital outlay program. At the same time, another argument is that sizable sections of the State are not carrying their fair share of this burden of lower-division education.

That no significant savings will accrue to anybody can also be contended. The development of more junior colleges, as stimulated by State grants-in-aid for construction, would bring lower-division education geographically closer to many potential students. Enrollment of students who would not otherwise have entered any college might increase the total cost, despite any savings on diverted students. In any event, a further argument is that the way in which funds are provided makes little difference—the net cost to the total economy of the State will be essentially the same. This matter of junior college financing will be debated, but some kind of change seems likely.

The problem of junior college financing will require a major policy decision; it will be considered carefully by the Legislature. Any change the Legislature makes will undoubtedly affect the amounts of State funds appropriated for higher education and consequently will affect the expenditures projected in this study.[7]

The Effect of Changes in Instructional Methods. Methods of instruction affect the costs of operation, as well as the costs of construction. Laboratory instruction is more costly, both in operation and in facilities, than is general classroom instruction. Laboratories, shops, fields, and the like are needed in the "learn-by-doing" kind of instruction. The numbers of students, professors, and courses involved in "learn-by-doing" instruction have varied greatly from campus to campus and from decade to decade. Any changes in the relative amount of such instruction will significantly affect the projected costs of higher education in California. The same may be said of instruction by television or of a number of possibilities on the educational horizon. Only time will tell. But one must assume that some changes in instructional methods will occur and that they will affect costs.

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[7] The 1960 Special Session of the Legislature referred the whole matter of additional State support to junior colleges to interim study with the provision that a report be submitted to the 1961 session, "which will recommend the type and degree of State support for junior colleges."

The Effect of Changes in Tuition Rates and Student Fees. After many years of policy commitment to low incidental fees and tuition in California's publicly controlled higher education, consideration is being given to some appreciable increase in the charges levied on students. Any increase in the personal costs of education quite likely will tend to reduce the number of students attending institutions of higher education. For example, the establishment of parking fees at state colleges in 1959-60 has affected the enrollments of limited students in late afternoon and evening classes. Any substantial adjustment in such charges will affect enrollment and consequently the costs of education to the State.

Any substantial change in the out-of-state tuition charged nonresidents of California would affect enrollments. Though the proportion of such students is small, the numbers are appreciable. According to a recent report of the American Association of Collegiate Registrars and Admissions Officers, California had an inmigration of 17,964 students in its publicly supported institutions of higher education in the fall of 1958. Incidentally, the *net* inmigration to all institutions by all nonresident students in both public and independent institutions in California was 10,766 in the fall of 1958.[8] Entirely beyond the scope of the forecast are the policy actions of the home states and countries of these students. Those states and countries may make educational and economic decisions that could either increase or decrease the outward flow of their students or the attraction of California students to those states or countries. Our net import of students will not only be conditioned by the California admission standards and tuition and incidental fee structures but also by the relation of our changing standards and fee structures to those of other states. It is an economic, political, and cultural uncertainty.

The Effect of General Economic Conditions and Other Factors. General economic conditions have an impact on enrollments. A more prosperous economy generally tends to encourage a larger portion of potential students to attend college. Attitudes toward education affect enrollments. The United States has long had an increasing proportion of its youth in higher education because of the belief that higher education benefits both the individual and society. The international situation also has an impact. Competition between nations, which has taken and will continue to take many forms, may also come to involve direct educational competition. Russia is obviously promoting education as an indirect avenue to supremacy. No one has ever been able accurately to forecast economic conditions, cultural values, or international relations, except to say that they will change in the future as much as they have in the past.

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[8] *Home State and Migration of American College Students,* Fall 1958. American Association of Collegiate Registrars and Admissions Officers, December 1959, pp. 19, 21.

California has almost continuously experienced rising land values. California land values vary tremendously, and they vary from location to location. Land on which to construct an institution of higher learning in a metropolitan location, such as Los Angeles, is much more expensive than in a less densely settled location, such as Turlock. The expansion of an established campus is generally more expensive per acre than the original acquisition, even when one allows for inflation. The existence of a college seems to increase land values on its perimeter. The speed with which land can be acquired, the locations in which it is acquired, and the long-range adequacy of campuses will significantly affect costs.

The degree of accuracy in master planning the maximum enrollment and the total physical facilities of each campus will affect costs. Changes in projected maximum enrollments may necessitate the crowding of buildings on the campus. This frequently requires expensive relocation of utility lines. If larger enrollments are foreseen, taller buildings may have to be constructed. Costs of streets, sidewalks, and many other elements are lower on a compact well-planned campus than they are on a campus inadequately master planned and built in stages. Ability to plan properly and to follow a given plan for a reasonable length of time will affect projected costs.

The timing of construction also has its impact. Delay, as evidenced by experience, generally means higher costs. Since World War II, construction costs have increased in California about 5 per cent per year. Experience clearly shows that delay in constructing a particular project has always resulted in a significant increase in the cost.

California has many code provisions related to construction that are designed to insure the safety of a building's occupants. The public demands such protection, even though it is recognized to be costly. To increase the earthquake resistance of buildings costs money. To protect occupants from fire hazards costs money. Certain requirements designed to protect the health of individuals change the cost of buildings. As experience and understanding of these problems continue, changes in the code requirements will take place. These changes will have an impact on costs.

Demands and limitations on architectural designers have cost implications. Quality emphasis may be given to the interior or exterior of a building or both, to the hidden or exposed elements of a building or both, to the structure or the mechanical and electrical elements of the building or both, and the like. Emphasis may be placed upon the building's aesthetic appeal or its functional adequacy or both. California state college construction, for example, has shown relatively little attention to this quality; the emphasis has been almost exclusively upon cost, structural quality, safety, and interior function. If the State should place more emphasis upon the esthetic appeal of its buildings, immediate construction costs might increase. This would have an impact upon projected costs.

There are numerous other factors that could significantly affect construction costs. Examples are the type of construction, extent of landscaping, and State organization for planning and construction. These factors and others merit more extensive treatment than is possible in this brief report. They are here cited merely to illustrate the fact that in predicting costs many uncertainties and intangibles become apparent.

Factors Affecting State College and University Costs

Advanced undergraduate work in both the state colleges and the University and the more specialized graduate work conducted in the University require higher physical-plant standards than does lower-division work, both as to quantities of building space and as to the specialized equipment and utilities generally necessary for advanced instructional laboratories and for research laboratories. Differences in the requirements for instructional space are even greater than the differences between the amounts and kinds of space required for any one student in class at one time. The generally smaller enrollments in upper-division and graduate courses do not permit the utilization rates that are possible with the larger enrollments and less-specialized facilities of most lower-division courses. There are, however, such exceptions as occupational programs with predominantly shop or other laboratory work; these may require amounts of building space for a given number of students—even at the lower-division level of instruction, including that in junior colleges—that equal, if not exceed, those of the most advanced instruction in the sciences.

Another factor that influences the per-student space requirements is the generally greater number of faculty members required for a given number of upper-division or graduate students than for the same number of lower-division students. The floor area in relation to the number of students is then still further increased by the provision of staff-research facilities. Such facilities have long been a recognized necessity in the University and are now accepted in theory for the state colleges.[9]

None of these factors is taken into account by this status quo study, based on 1957-58 circumstances and standards. In fact, to the extent that the capital outlay estimates in this report are based on the *Restudy* space standards for the state colleges and the University, as summarized in that report's Table 36, all these estimates reflect the "student mixes" by levels and subject fields of instruction, and the student-faculty ratios, of the 1953-54 data on which the *Restudy* was based. With the limited data available to this Committee, it has not been able to estimate the effect on capital outlay of any given educational change as accurately in the case of the state colleges as in that of the University. The state colleges' physical planning is based on standards and formulas that do not directly reflect any of the differences between levels and subject fields of instruction as shown by Tables 33 and 34 of the *Restudy*. Certain inferences applicable at least in part to the state colleges can, however, be drawn from an examination of the University's physical planning, which, so far as the ordinary requirements of instructional departments are concerned, has been in accordance with *Restudy* Tables 33 and 34 from the time of that report's publication to the present.

Effect of Educational Changes on *Restudy* Space Standards

On the basis of the University standards shown by *Restudy* Tables 33 and 34, assuming one FTE faculty member per thirty FTE lower-division students, one FTE faculty member per twelve FTE upper-division students, and one FTE faculty member per eight FTE graduate students, the fact can be demonstrated that in the physical sciences, for example, the per-FTE-student space requirements are approximately 70 per cent greater for upper-division than for lower-division instruction. For graduate instruction the space requirements are approximately two and one-half times as great as for upper-division instruction, or more than four times as great as for lower-division instruction. In contrast, the fact can be demonstrated that in such professional subject fields as education, the per-FTE-student space requirements are only about 30 per cent greater for upper-division than for lower-division instruction and only about 20 per cent greater for graduate than for upper-division instruction, or a little more than one-half again as great for graduate as for lower-division instruction. Such subject fields as agriculture and engineering require more absolute floor area per FTE student than the physical sciences. Foreign languages and the social sciences require less than education. However, the percentages just mentioned for the physical sciences and education are the extremes in terms of *relative* differences between levels of instruction in any one subject field. Nevertheless, the combined effect of a total-campus "student mix" in terms of both subject fields and levels of instruction can be much greater than could be inferred directly from the above-mentioned percentages.

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[9] Senate Bill 33, as enacted by the 1960 Legislature, includes this provision: "Faculty research is authorized to the extent that it is consistent with the primary function of the state colleges and the facilities provided for that function."

The campus-average space requirements of each level of instruction can be relatively more different from each other than are the level-by-level requirements of even the most extreme subject field by itself. This can happen if the FTE-student instructional loads in the subject fields of high space requirements are relatively greater at the upper-division and graduate levels than are those in the subject fields of low space requirements. This not only *can* happen; it is the actual circumstance at the University's Berkeley, Los Angeles, and Davis campuses. In contrast, it can also happen that a campus' total FTE-student instructional load is so much heavier at the lower-division level than at the upper-division and graduate levels that even a relatively heavy upper-division instructional load in subject fields of greater-than-average space requirements has comparatively little effect on the campus-average space requirements per FTE student at the different levels of instruction. This has been the case to date at the University's Riverside and Santa Barbara campuses.

Relative Differences in Per-Student Space Requirements at the University

It should be noted that the foregoing kind of FTE-student measurement represents the *instructional loads* at the different levels and in the different subject fields, *irrespective* of academic levels and majors of the *students* enrolled. The FTE-student measurement is, in effect, the sum of the small "parts" of each of the many different students enrolled in a given group of courses. Therefore, comparing the per-student space requirements of different levels of *students* necessitates taking into account the extent to which the average *student* of a given level enrolls for *instruction* of the several levels. For example, account must be taken of the extent to which upper-division students take not only upper-division courses but also lower-division courses and, in some instances, graduate courses.

The University's Berkeley campus in the fall of 1958, for example, was accommodating 6,937 full-time upper-division *students*. Excluding the physical education and military science courses in which they enrolled, the total full-time equivalence of the 6,937 upper division *students* was 6,659 FTE distributed as follows: lower-division courses, 1,547 FTE; upper-division courses, 5,036 FTE; and graduate courses, 76 FTE. Again excluding physical education and the military sciences, the total upper-division *instructional load* was 6,273 FTE students. This total instructional load at the upper-division level (6,273 FTE) consisted of the just-mentioned 5,036 FTE representing upper-division students enrolled in upper-division courses, plus the full-time equivalence of lower-division students enrolled in upper-division courses (255 FTE) and the full-time equivalence of graduate students enrolled in upper-division courses (982 FTE).

On the basis of corresponding figures representing the distribution of the "FTE-ness" of each academic level of student among the different academic levels of instruction at each of the University's campuses in the fall of 1958, the differences between the per-*FTE*-student space requirements of the different levels of *instruction* could then be so applied as to develop estimates of the differences among the *per-student* space requirements of the different levels of *students*. The figures so developed indicate that, in terms of over-all averages at the Berkeley, Los Angeles, and Davis campuses in the fall of 1958, the instructional-department space requirements *per full-time student* were in the ratio of approximately 1 to 2 to 5 for lower-division, upper-division, and graduate *students*, respectively. (1.0 to 1.9 to 5.2 at Berkeley; 1.0 to 1.8 to 4.5 at Los Angeles, excluding the medical center; and 1.0 to 1.8 to 5.9 at Davis, including the agricultural sciences). At that time, the Riverside campus had no measurable FTE-student instructional load at the graduate level; consequently, only the corresponding ratio of 1.0 to 1.4 for lower-division and upper-division students, respectively, could be determined. At Santa Barbara in the fall of 1958, the limited graduate program was largely in the field of education. Therefore, the corresponding ratio of 1.0 to 1.5 to 2.4 included a much lower graduate factor (2.4) than the graduate factors at Berkeley, Los Angeles, and Davis (5.2, 4.5, and 5.9, respectively).

The same kind of ratio of the average per-student space requirement of a given group of students to that of lower-division students alone—what might be called "ELD" (equivalent lower division)—can, of course, be computed for a campus as a whole. In effect, this is simply a weighted average of the ratios for the individual levels of students, the ratio for each level being weighted by the number of students of that level. These figures for the University's campuses in the fall of 1958—representing the over-all per-student space requirement, counting the per-student space requirement of lower-division students as 1.0—are 2.6 for the Berkeley campus, 2.3 for the Los Angeles campus (again excluding the medical center), 2.4 for the total Davis campus, and 1.2 for both the Riverside and Santa Barbara campuses.

In all instances this relationship reflects the campuses' distributions of students among levels and subject fields of instruction, the difference between the figures for Berkeley and Los Angeles being principally the result of differences between the distributions among subject fields, and Davis' figure being higher than Riverside's and Santa Barbara's as a result principally of Davis' agricultural enrollments in general, but particularly at the graduate level.

Implications of Per-Student Differences for Both University and State College Campuses

There are several pertinent reasons for examining the University's figures in the foregoing detail. First, their variety is so great that clearly no such thing as "the University figure" exists for any particular measurement. The University campuses are significantly different from each other in the characteristics reflected in relative per-student space requirements. Consequently, the inference is reasonable that corresponding data on the several state college campuses would show them also to be significantly different from each other—and from the University campuses—in respect to the relative per-student space requirements of the different levels of students. No similar analysis was made of state college data.

In any event, the fact is clear that upper-division students generally require considerably more building space than lower-division ones and that graduate students require even more. Therefore, although precise numerical statements must depend upon separately computed figures for each campus, state college and University enrollments obviously cannot reasonably be treated simply as undifferentiated totals in considering such questions as the capacity of a given physical plant or the effect on either capacity or costs of any contemplated shifting of lower-division students from these institutions to the junior colleges.

Using the University's Berkeley and Los Angeles figures as a rough guide for full-scale campuses with extensive graduate work in a broad array of subject fields and considering only *quantities* of building space, clearly the shifting of *two* lower-division students would release enough space for *one* upper-division student. The shifting of *five* lower-division students would provide space for *one* graduate student. Therefore, any significant reduction in the *percentage* of lower-division students in either the state colleges or the University—particularly if the resultant increase in the percentage of upper-division and graduate students occurs principally at the graduate level—will significantly *decrease* the total student capacity of any given physical plant. It will significantly *increase* the average per-student cost of expanding that capacity by any given total number of students. The Santa Barbara figures, however, indicate that such a shift in an institution with relatively less graduate work—particularly if that graduate work is predominantly in such professional subject fields as education, as might be the case in at least some of the state colleges—would have a lesser, though still significant, effect on total capacity and on average per-student costs. But whether great or small, the effect will be to increase the per-student costs on which this study's estimates of future state college and Universiy capital outlays are based.

Entirely aside from any shifting of lower-division students and its effect on the "student mix" of any one group of institutions, it should be noted that the statistics of the status quo, on which this study is based, are something like a snapshot of a scene that should be photographed with a movie camera. Regardless of changes that may be made hereafter, other changes are already occurring as part of any institution's normal growth and development. The Committee could see clear indications in certain University of California data from which inferences applicable to the state colleges may be drawn.

In connection with the University's own capital outlay programs, a weighted average of the space standards in *Restudy* Tables 33 and 34 is computed annually for each campus. The basis used is the actual distribution of the total FTE-student instructional load for the fall semester among subject fields and levels within each subject field, and the distribution of FTE faculty among those subject fields. For the three fall semesters 1956 through 1958 the method of computing those figures was uniform. The results therefore accurately reflect, for each campus, the effect of *changes* in "student mix" and staffing patterns exclusively. As between campuses, the results also show the effect of *differences* in those factors because the space standards applied to the FTE students and to the FTE staff of a given level of instruction in a given subject field were identical in all instances. Therefore, to the extent that the record of growth and development in that two-year period is representative, these figures reflect educational changes already in process.

Changing Space Standards Within the University

In terms of the campus-wide average of the *Restudy* space standards for all instructional departments except physical education and the military sciences, these figures expressed as assignable square feet per FTE student, are as follows:

University Campus	Assignable Square Feet Per FTE Student		
	1956	1957	1958
Berkeley	84	85	87
Los Angeles, excluding Medical Center	71	73	76
Davis, including Agriculture	188	183	181
Riverside, Letters and Science only	67	66	58
Santa Barbara	59	57	55

To one who knows what is happening within the University, the direction of every year-to-year change and of every inter-campus difference seems consistent with the circumstances of that period of time. The year-to-year changes in the Berkeley and Los Angeles figures reflect principally the changes in "student mix" by levels of instruction. The difference between any one year's figures for those two campuses reflects principally such differences in "student mix" by subject fields as Berkeley's greater relative amount of instruction in the engineering and physical sciences and Los Angeles' greater relative amount in the arts and the social sciences. Davis' much greater figures are the result of its considerable amount of instruction and research in the agricultural sciences, just as the year-to-year decline in those figures is a result of the decline in *relative* amount of that agricultural instruction and research as the college of letters and science has grown in numbers.

The differences between the Riverside and Santa Barbara figures are the result of much the same kind of difference between subject-field "student mixes" as between those of Berkeley and Los Angeles. The progressive lowering of both Riverside's and Santa Barbara's figures is the result principally of the small campuses' typical ability to accommodate increasing numbers of students with less than a corresponding increase in staff. However, the difference between the Riverside and Santa Barbara figures on the one hand and the Berkeley and Los Angeles figures on the other is largely the result of the difference in "student mix" by levels. As soon as the increase in relative amount of upper-division and graduate instruction becomes significant at Riverside and Santa Barbara, the trend in over-all per-student space requirements at those campuses inevitably will be reversed and will cause the pattern to approach those of Berkeley and Los Angeles.

Implications of Changing Institutional Characteristics

The foregoing analysis may seem complex, and the problem outlined may appear complicated. They are. The significance of the analysis is not the numerical values as such but rather the clear indication that there is no such thing as "the" figure for any group of institutions, either state colleges or University. A statistical picture of the status quo is a fiction if it is thought to represent something that will remain "as is." Only if a conscious and deliberate effort is made to keep it so can such be the case. Even then it is unlikely. If there had been the time and staff for collecting and analyzing the necessary data concerning all segments of higher education, the status quo might logically have been defined as including all inherent changes disclosed by current trends. On that basis it might be concluded that even the status quo of the state colleges and University includes a fairly steady annual increase in the over-all per-student capital-outlay requirements beyond the amounts estimated by this Committee. Even a small yearly percentage as "simple interest" can become significant in a fifteen-year period. Also this increase would be based on the space requirements of the *total* future enrollments, not of just the increase in enrollments.

Additional Space Needs for Research Activities

On one other major factor the Committee had only University of California data to examine. This factor is the change in functions of educational institutions, aside from the direct teaching functions. In the University's case, this change is occurring principally in such forms as increasing amounts of organized research supported by federal and foundation funds and increasing numbers of postdoctorate research fellows and visiting scholars supported by non-State funds. To the extent that such factors exist at all in the state colleges, the corresponding increases in public-service functions tend to be supported by State funds, more so than they are in the University. This may particularly be expected in the case of any general increase in the amount of research by state college faculty. In both the state colleges and the University, however, the impact on capital-outlay requirements is greater than that on State funds for operating expenses.

The University so far lacks objective data on the numbers and kinds of persons involved in such research activities and on the per-person space requirements for them. Some basis exists, however, for judgment in the evidence of sheer physical crowding resulting from the increasing development of these activities, together with some data on such restrictions as those that have had to be imposed on the acceptance of research contracts and grants to the University and on the admittance of outside-supported individuals for post-doctorate study and research in certain departments. On this basis the Berkeley campus' administration has developed preliminary estimates for various necessary allowances in amounts ranging, in the aggregate, from 20 to 30 per cent of the amounts of building space covered by *Restudy* Tables 33 and 34, or roughly two-thirds that percentage of the totals covered by *Restudy* Table 36.

There are increasing prospects for having some part of these additional capital outlay requirements met from the same non-State sources as those that supply operating funds. However, for the major part of any such added costs apparently no immediate source exists, except State funds. Therefore, the extent to which this factor will cause the Committee's estimates for capital outlay to be conservative, both for the state colleges and the University, will depend on the extent to which recognition is given to a State obligation to provide physical facilities, not only for research by individual faculty members and graduate students but also for organized research and other public service functions for which increasing pressure is felt.

Section V

THE PROJECTED COSTS OF HIGHER EDUCATION IN CALIFORNIA THROUGH 1975

Predictions of social phenomena are always hazardous. Particularly in a dynamic State like California, and in times like these, attempting to estimate dollar expenditures for public higher education for the years ahead is difficult. Never in the nation's history has any state undergone such a rapid population change. Migration into the State since World War II has been unparalleled. The State already has more children enrolled in school than any other state, and within another decade California appears destined to become the most populous state in the Union.

Rapid Changes in Higher Education

This tremendous change in the population and economy is reflected in demands placed upon institutions of higher education. The expansion of business and industry has required increased numbers of trained personnel. The movement to the State of new organizations, most notably such highly skilled and rapidly changing industries as those related to aircraft, chemicals, electronics, rockets, and similar "space-age" developments, has resulted in a demand not only for more college graduates but also for more technicians and specialized experts. Many of these demands for new personnel have required levels of education and competence implying graduate education, specialized scientific curricula, and advanced research in institutions of higher education. The net result has been a great upsurge in college enrollments and an increasing demand by government, business, and industry for all kinds of new services.

The purpose of this section is to set forth projections of the future costs for higher education in California. Financial plans for the future must be given consideration despite all difficulties and uncertainties. That the results can at best be estimates, to be conditioned by many unknown or unforeseen variables, is recognized.

Previous Projections of Expenditures for 1960 and 1965

Previous studies of higher education in California have made estimates of future costs for higher education that have proved unrealistic, despite the fact that economic and social conditions at the time the predictions were made may have appeared to be relatively more stable than they seem now. For example, *A Report of a Survey of the Needs of California in Higher Education,* 1947, prepared for the Liaison Committee of The Regents of the University of California and the State Department of Education (the "Strayer Report") undertook such an estimate. The study was directed by George D. Strayer of the Division of Field Studies in the Institute of Educational Research of Teachers College, Columbia; Aubrey A. Douglass, Associate State Superintendent of Public Instruction; and Monroe E. Deutsch, Provost and Vice-President Emeritus of the University of California. It was conducted by a well-qualified staff. After analyzing the problems of higher education in California in 1947, the authors concluded that, "The estimated total [current expense] of public higher education for 1960 is $70,170,000." In 1957-58, the total current expense of public higher education exceeded $276,000,000. In 1959-60, it will certainly exceed $300,000,000.

The *Restudy,* published in 1955, also underestimated the figure. It stated that,

> . . . in order to provide for higher education in 1965 at a level comparable with that provided in 1954, the sum of approximately $226,974.000 will be required for general and educational income from State and local governments. . . .[2]

A table presented in that study indicated that public higher education's total requirements from all sources (including federal government, fees, gifts, grants, etc.) would be $293,080,359.[3] Even in terms

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[1] Monroe E. Deutsch, Aubrey A. Douglass, and George D. Strayer, *A Report of a Survey of the Needs of California in Higher Education.* Berkeley, University of California Press, March 1, 1948, p. 124.

[2] McConnell, Holy, and Semans, *op. cit.*, p. 402.

[3] *Ibid.*, p. 403.

of 1958 dollars this amount would fall short of the comparable amount spent in 1959-60 to say nothing of 1965. *Obviously, as late as 1954 and 1955, the Survey staff did not foresee the developments of the next few years! Their ten-year estimates were exceeded within five years!*

With these lessons from past experience in mind, the Committee has undertaken to make projections and to formulate estimates of expenditures and State appropriations for higher education in California during the period between 1960 and 1975. Efforts have been made to produce figures for both current expenditures and capital outlays that will indicate the level of annual expenditure required and the amounts of annual State appropriations needed for the years 1965, 1970, and 1975.

Bases for Projections — Conditions and Assumptions

Two sets of estimates of expenditures and State appropriations required to support higher education in California in 1965, 1970, and 1975 are set forth in this report. The *first* projections are based on *status quo,* defined to mean 1957-58 dollar costs of education, current standards of admission, and present ratios of students attending college. The *second* set of projections are based on the recommendations of the Master Plan Survey Team, assuming that its proposals with respect to new standards for admission, diversion of lower-division students, increased proportion of support paid to the junior colleges from the State School Fund, and other recommendations, including the creation of new institutions, will be made effective and operative during the next fifteen years. These are designated as *modified* projections.

Status Quo Projections

Status Quo Estimates of Current Expenditures, 1965, 1970, and 1975. There are various methods that may be used to project current expenditure levels on a *status quo* basis. The Committee considered numerous approaches to this particular problem and made several projections based on different techniques. Only one set of *status quo* estimates is presented. Briefly stated, it was derived by using as a base the 1957-58 current expenditures per student, separately for each academic level of student in each segment of publicly controlled higher education, and then calculating expenditures for a given year on the basis of the projected enrollments for each level and segment. Such a method produced the following figures:

Institution	(Millions of Dollars)			
	1957-58	1965-66	1970-71	1975-76
Public Junior Colleges	77.0	152.8	192.9	236.3
State Colleges	54.5	127.3	190.9	243.8
University of California	145.1	268.4	373.8	478.8
Total	276.6	548.5	757.6	958.9

In terms of 1958 dollars, of *status quo* enrollment estimates of the Technical Committee on Enrollment Projections, and of the other *status quo* conditions mentioned above, the judgment of the Committee is that current expenditures for public higher education in California will be approximately $550,000,000 in 1965, $760,000,000 in 1970, and nearly $1,000,000,000 in 1975.

***Status Quo* Estimates of Capital Outlays, 1960-1975.** There are several bases on which *status quo* capital-outlay requirements can be projected with limited data. The one that the Technical Committee on Costs believes to be soundest is based on the average per-student cost of new buildings and all other physical facilities, computed separately for each academic level of student in each segment of higher education on the basis of *status quo* standards of space assignment and utilization. Thus, lower-division, upper-division, and graduate-level needs were computed separately for the public junior colleges (lower division only), for the state colleges, and for the University of California (excluding medical centers).

For each academic level of full-time student in each group of institutions, the corresponding over-all average cost per student was applied to the number by which the *status quo* enrollment projected by the Technical Committee on Enrollment Projections exceeded the "assured" capacity reported by the Technical Committee on Institutional Capacities and Area Needs. This computation was performed separately for each State economic area in the case of the junior colleges, and was then totaled, disregarding the excess capacities reported for certain areas. However, it was performed directly in terms of State-wide totals in the cases of the state colleges and the University because no excess capacity was reported for any one of these institutions. These estimates assumed, in effect, that the previously authorized new campuses would be developed with no greater capacities than the *status quo* enrollments projected for them, even though the minimum size then recommended by the Technical Committee on Institutional Capacities and Area Needs (and subsequently by the Master Plan Survey Team) was, in some instances, greater than the projected *status quo* enrollment in 1975.

The estimates for the public junior colleges represent total capital outlay, excluding residence halls but including the cost of land, irrespective of sources of funds. The estimates for the state colleges and the University, however, represent net capital outlay of State funds only, including residence halls for 10 per cent of the full-time students in the state colleges and 25 per cent in the University. In other words, they exclude that part of residence-hall and other construction financed by loans and are incomplete in two respects:

1. Only partial inclusion of land-acquisition costs for both the state colleges and the University.
2. Complete exclusion of the University's medical centers.

In all instances—junior colleges, state colleges, and the University—capital-improvement repairs and alterations are excluded; no provision has been made for stadiums or for replacement of temporary buildings. On these bases, the following are the *status quo* projections of *yearly* capital outlays, based on 1958 construction costs:

Institution	(Millions of Dollars)		
	1965-66	1970-71	1975-76
Public Junior Colleges	20.6	41.1	48.2
State Colleges	55.8	43.2	39.9
University of California	60.2	48.5	48.2
Total	136.6	132.8	136.3

These estimates represent *annual* capital outlay appropriations for the indicated years, corresponding to the yearly current expenditures previously shown. To show the capital outlay estimates in this form, certain assumptions had to be made. Current expenditure estimates for a given year are properly based on the enrollment projected for that year. Capital outlay appropriations, however, must be made in an earlier year if the construction is to be completed by the time the students arrive. The Committee assumed, therefore, that the enrollments projected for 1965 represented total capital outlay requirements of the three fiscal years 1960-61 through 1962-63, taking into account the "assured" capacity; that the further increases in enrollment projected for 1970 represented total capital outlay requirements of the five fiscal years 1963-64 through 1967-68; and that the still further enrollment increases projected for 1975 represented total capital outlay requirements of the five fiscal years 1968-69 through 1972-73.

The estimated yearly capital outlays listed above are averages of the series of fiscal years ending with 1965-66, 1970-71, and 1975-76, respectively, the last one assuming continuation of the capital-outlay levels of 1971-72 and 1972-73. The following summary of the basic *status quo* estimates is a better indication of the total needs and their changing yearly amounts, based on 1958 construction costs:

Institution	(Millions of Dollars)					
	1960-61 through 1962-63		1963-64 through 1967-68		1968-69 through 1972-73	
	Total	Per Year	Total	Per Year	Total	Per Year
Public Junior Colleges......	32.2	10.7	152.7	30.5	240.7	48.2
State Colleges.............	190.3	63.4	240.7	48.1	199.5	39.9
University of California....	214.1	71.4	244.6	48.9	240.8	48.2
Total..................	436.6	145.5	638.0	127.5	681.0	136.3

The estimated total of the thirteen fiscal years now remaining to meet the capital-outlay requirements of the projected *status quo* enrollments of 1975—total capital outlay in the case of the public junior colleges, and State appropriations of capital outlay in the case of the state colleges and the University of California, excluding the latter's medical centers—was, therefore, approximately $1,750,000,000 ($1,756,000,000). Of this total, the capital outlays for the junior colleges would be about $426,000,000, and the State-appropriated outlays for the state colleges and the University combined would be approximately $1,330,000,000 ($631,000,000 for the state colleges and $700,000,000 for the University).

The state college figures include $26,400,000, and the University figures $40,400,000, yet to be appropriated for projects that were funded at least through working drawings in 1959-1960, including those counted as "assured" capacity in the report of the Technical Committee on Institutional Capacities and Area Needs. Data concerning the junior colleges' "assured" capacity were not available.

Status Quo Estimates of State Appropriations Required in 1965, 1970, and 1975. In 1957-58, the State provided, by appropriation, 61.7

per cent of the total current expenditures of the University of California, excluding the three major Atomic Energy Commission projects, and 78.2 per cent[4] of those of the state colleges. For the public junior colleges the State provided, by apportionment to local school districts, 29.4 per cent of their current expenditures. Assuming relationships based on the previous decade, the following annual State appropriations for current expenditures and capital outlays will be required:

Institution	(Millions of Dollars)		
	1965-66	1970-71	1975-76
Public Junior Colleges			
Current Expenditures	47.4	59.8	73.3
Capital Outlays	......[1]	......[1]	......[1]
State Colleges			
Current Expenditures	108.2	162.3	207.2
Capital Outlays	55.8	43.2	39.9
University of California			
Current Expenditures	166.4	231.8	296.9
Capital Outlays[2]	60.2	48.5	48.2
Total			
Current Expenditures	322.0	453.9	577.4
Capital Outlays[2]	116.0	91.7	88.1
Grand Total[2]	438.0	545.6	665.5

[1] At present all capital outlay in junior colleges is financed by local school districts.

[2] Capital-outlay appropriations for the University medical centers are not included.

Projections Based on Master Plan Recommendations

With the same methods used in developing the data for the *status quo* projections, the Committee also developed estimates based on the thesis that the recommendations of the Master Plan Survey Team will be accepted and implemented. In the predicted expenditures and appropriations the following assumptions were made:

Public Junior Colleges. For the junior colleges it is assumed that:

1. The full-time public junior college students in 1965, 1970 and 1975 will be distributed among the economic areas of the State

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[4] Assumed to average 85 per cent in the period 1965-1975.

as predicted by the Committee on Enrollment Projections in its report. Inherent in this predicted distribution is the diversion from the state colleges and the University to the public junior colleges of particular economic areas of 10,300 full-time lower-division students in 1965; 24,800 in 1970; and 42,600 in 1975.

2. The financing plan for public junior colleges will be modified in accordance with the Master Plan Survey Team's recommendation that the proportion of total current support paid to the junior colleges from the State School Fund be increased from the approximately 30 per cent now in effect to approximately 45 per cent in 1975. The Committee on Costs assumed 1 per cent increase per year.

State Colleges. For the state colleges it is assumed that:

1. Four new state colleges, North Bay, Stanislaus, San Bernardino, and Southwest Los Angeles, will be established and in operation by 1965.

2. Four existing state colleges, Long Beach, Los Angeles, San Diego, and San Jose, will have reached maximum enrollments by 1960.

3. Upper-division students diverted by reason of planning figure limitations from Long Beach and Los Angeles State Colleges will enroll at Orange County, San Bernardino, and Southwest Los Angeles State Colleges.

4. About 900 upper-division students in San Diego County will be diverted to Orange County and San Bernardino County State Colleges.

5. Students diverted from the lower division of state colleges to junior colleges will enroll in the upper division of the institution in which they would have enrolled under *status quo* conditions.

6. In the case of the San Bernardino State College, 85 per cent of the students who would have attended the Kellogg-Voorhis Unit of California State Polytechnic College under *status quo* conditions will attend San Bernardino at the upper-division level.

University of California. For the University of California it is assumed that:

1. Three new campuses in the South Central Coast area, the Southeast Los Angeles-Orange County area, and at La Jolla, for both undergraduate and graduate students, will be established and in operation by 1965.

2. The University campuses at Berkeley and Los Angeles will be limited to a maximum enrollment of 27,500.

3. At Berkeley and at Los Angeles, branch installations conducted by the parent institution will be established in nearby communities for 2,500 full-time undergraduate students by 1975 in each instance.

4. For the Berkeley and Los Angeles campuses, limitations of lower-division students to 40 per cent and 35 per cent, respectively, of undergraduate enrollment will be made effective.

5. Undergraduate students diverted from the Berkeley, Los Angeles, and Southeast Los Angeles-Orange County campuses by reason of planning figure limitations will enroll at other University campuses in the general area.

TABLE 25

Modified PROJECTION OF FULL-TIME ENROLLMENTS, STATE COLLEGES, FALL 1975

Campus	Undergraduate			Graduate	Total
	Lower Division	Upper Division	Per Cent Lower Division		
Alameda	1,700	3,650	31.8	450	5,800
Cal Poly KV	6,700	7,400	47.5	650	14,750
Cal Poly SLO	5,700	5,150	52.5	200	11,050
Chico	2,750	2,450	52.9	400	5,600
Fresno	3,350	4,400	43.2	550	8,300
Humboldt	2,200	1,800	55.0	250	4,250
Long Beach	6,550	12,100	35.1	1,150	19,800
Los Angeles	6,250	11,650	34.9	1,800	19,700
North Bay	750	1,550	32.6	100	2,400
Orange	2,800	5,600	33.3	500	8,900
Sacramento	2,550	4,000	38.9	500	7,050
San Diego	4,850	9,050	34.9	850	14,750
San Fernando Valley	8,250	8,400	49.5	950	17,600
San Francisco	3,350	3,650	47.9	1,050	8,050
San Jose	5,200	9,700	34.9	2,100	17,000
Stanislaus	700	1,300	35.0	150	2,150
Proposed New Colleges[1]					
San Bernardino—Riverside	1,450	3,350	30.2	400	5,200
Southwest LA	2,300	5,400	29.9	600	8,300
Total	67,400	100,600	......	12,650	180,650

[1] These were authorized without appropriation by the 1960 Special Session of the Legislature.

These basic assumptions, presented in abbreviated form, are set forth in detail in the report of the Technical Committee on Enrollment Projections.

Projected Enrollments in 1975. The *modified* 1975 enrollment projections for the individual state colleges and the several campuses of the University are shown in Tables 25 and 26. These tables are abstracted from the report of the Technical Committee on Enrollment Projections. These tables show for each campus the number and percentage of lower-division students, the number of upper-division and graduate students, and the total enrollment. No campus-by-campus enrollment projections are available for the public junior colleges. Their total full-time lower-division enrollment will be 288,950 in 1975, according to the *modified* projections. Of this total, 42,600 will have been diverted from state college and University campuses. The second set of estimates of expenditures for higher education and of State appropriations are based on these *modified* enrollments. *(See Table 25, page 102.)*

TABLE 26

Modified PROJECTION OF FULL-TIME ENROLLMENTS, UNIVERSITY OF CALIFORNIA, FALL 1975

Campus	Undergraduate			Graduate	Total
	Lower Division	Upper Division	Per Cent Lower Division		
Berkeley	6,000	9,000	40.0	12,500	27,500
Branch	250	2,250	10.0	......	2,500
Davis	2,800	2,750	50.1	4,400	9,950
Los Angeles	5,250	9,750	35.0	12,500[1]	27,500[1]
Branch	250	2,250	10.0	......	2,500
Riverside	2,950	4,950	37.3	1,200	9,100
Santa Barbara	4,950	5,550	47.1	1,500	12,000
La Jolla	1,550	3,200	32.7	1,000[2]	5,750[2]
Southeast Los Angeles—Orange	2,800	5,200	40.0	2,000	10,000
South Central Coast	2,000	4,450	31.0	2,000	8,450
San Francisco Medical	......	......	......	3,500	3,500
Total	28,800	49,350	36.9	40,600	118,750

[1] Includes 2,300 students in Medical Center.

[2] Includes 100 students in Scripps Institution of Oceanography.

Both the *status quo* and *modified* estimates have been based on projected full-time enrollments. The costs related to such other students as part-time and special students have been included in the cost figures on the assumption that the relative numbers will be the same as in 1957-58, except in the case of the "divertees."

Modified Projections

Modified Estimates of Current Expenditures Based on Master Plan Recommendations, 1965, 1970, and 1975. Using the same analytical approach and method previously described in this section for the *status quo* projection of current expenditures, estimates were developed on the basis of the program recommended by the Master Plan Survey Team and the *modified* enrollment projections developed by the Committee on Enrollment Projections. Following are the *modified* estimates of current expenditures:

Type of Institution	(Millions of Dollars)			
	1957-58	1965-66	1970-71	1975-76
Public Junior Colleges	77.0	160.2	210.8	267.0
State Colleges	54.5	121.0	179.9	226.6
University of California	145.1	233.2	323.2	448.0
Total	276.1	514.4	713.9	941.6

Modified Estimates of Capital Outlays to 1975, Based on Master Plan Recommendations. To develop *modified* capital-outlay estimates, the Committee followed the same procedures as those outlined earlier for the first set of estimates but used appropriate adjustments for the library seating and utilization-rate standards proposed by the Master Plan Survey Team. In the absence of specific recommendations concerning, for example, research facilities in the state colleges and student health facilities in connection with increased student housing in any institution, no other proposed changes than those concerning library seating and scheduled utilization could be taken into account. Because these capital-outlay projections were computed separately for each academic level of student in each group of institutions, as were the first set, the Enrollment Projection Committee's shifting of student populations was automatically taken into account.

Again, as in the first set of estimates, the Committee's method of calculation implicitly assumed that new-campus capacities would be developed no faster than the projected enrollment growth of each new campus. This is an unrealistic assumption, leading to an underestimation of capital outlay for the initial development of a new campus. But if the enrollment eventually equals the capacity, an initial development in excess of initial enrollment (as is practically necessary for at least certain parts of the physical plant) would merely shift part of the total capital outlay to the earlier years without affecting the over-all total.

The Committee could not reconcile the recommended minimum size of campus with the projected new-campus enrollment in some instances, nor could it find any recommendation as to the size (capacity) of the initial development of a new campus. The recommended minimum sizes are specified by the Master Plan Survey Team in terms of full-time enrollments and are further specified as "to be attained within seven to ten years after students are first admitted," and to "be observed for existing institutions, for those authorized but not yet established, and for those later established." Even the two additional new state colleges are recommended to be "established and in operation *by 1965*," and the three new University campuses to "be completed without delay, and in any event construction started not later than *1962*." For North Bay State College, the *status quo* projection of full-time enrollment in 1975 was 2,500 and the *modified* projection is 2,400. For Stanislaus State College, the *status quo* projection for 1975 was 2,350 and the *modified* projection is 2,150, although the site subsequently selected (Turlock area) apparently is the one for which the Master Plan Survey Team estimated that the enrollment would be only 1,400 ("1,100 less than 2,500") in 1975. Yet, the applicable recommended minimum size is 3,000.

The same kind of relationship existed between the *status quo* 1975 projection for the University's new La Jolla campus (3,550) and the recommended minimum size of University campus (5,000), but the *modified* 1975 projection (5,750) appears to meet the seven-to-ten-year criterion. In all these dilemmas, as well as in the general problem of the unspecified initial size of any new campus, the Committee simply applied its estimate of average per-student cost for each academic level of student in a given group of institutions to the corresponding projected total number of students, irrespective of the largeness or smallness of any particular campus.

As in the *status quo* estimates, the *modified* capital-outlay estimates for the public junior colleges represent total capital outlay, irrespective of source. The estimates for the state colleges and the University of California again represent net capital outlay of State-appropriated funds only. They include student housing but do not include complete land-acquisition costs and they exclude the University's medical centers, as in the *status quo* estimates. Capital-improvement repairs and alterations are again excluded from all figures, as are allowances for replacement of temporary buildings. On these bases the *modified* projections of yearly capital outlays are as follows (in millions of dollars, based on 1958 construction costs):

Institution	(Millions of Dollars)		
	1965-66	1970-71	1975-76
Public Junior Colleges	31.6	56.2	62.8
State Colleges	57.5	42.3	38.4
University of California	47.8	52.8	59.4
Total	136.9	151.3	160.6

As in the corresponding *status quo* figures, these annual amounts are averages of the fiscal years 1960-61 through 1965-66, 1966-67 through 1970-71, and 1971-72 and 1972-73, respectively, for the sake of a listing for each of the three years for which current expenditures have been estimated. Again, however, a summary of the basic estimates (based on 1958 building costs) is a better indication of the total capital-outlay requirements and their changing yearly amounts. It is as follows:

Institution	(Millions of Dollars)					
	1960-61 through 1962-63		1963-64 through 1967-68		1968-69 through 1972-73	
	Total	Per Year	Total	Per Year	Total	Per Year
Public Junior Colleges	50.7	16.9	231.7	46.3	314.0	62.8
State Colleges	200.6	66.9	240.3	48.1	191.9	38.4
University of California	158.4	52.8	214.0	42.8	297.0	59.4
Total	409.7	136.6	686.0	137.2	802.9	160.6

The *modified* estimate of the thirteen-fiscal-year total capital outlay is, therefore, approximately $1,900,000,000 ($1,899,000,000). Of this total, the junior colleges would account for nearly $600,000,000 ($596,000,000), or approximately $170,000,000 more than under *status quo* conditions. The state colleges would account for approximately $633,000,000 of State-appropriated funds, or approximately $2,000,000 more than under *status quo* conditions, and the University for approximately $670,000,000, or about $30,000,000 less than under *status quo* conditions.

The *modified* capital outlay projections for 1975 enrollments therefore represent a decrease of about $28,000,000 in State appropriations for the state colleges and University combined, as compared with an increase of approximately $170,000,000 in total junior college capital outlay, in relation to the *status quo* projections. In this connection, the missing factor of the University's medical centers should not be overlooked. The *modified* projection of the University's total graduate enrollment in 1975 is only 950 greater than the *status quo* projection, but 900 of those 950 are additional graduate students in the two medical centers. Even at the University-wide average for nonmedical graduate students, the additional capital outlay represented by this modification of the medical center enrollments would offset more than half the above-mentioned reduction in State appropriations.

The Committee did not have sufficient time and staff to analyze the extraordinarily complex operations and requirements of medical centers and, therefore, had to exclude them from its capital-outlay estimates. Including the medical center enrollments would probably have produced a *modified* estimate of total State appropriations for the state colleges and the University of California essentially the same as, and certainly not significantly less than, the *status quo* estimate. The excluded factors of capital-improvement repairs and alterations and replacement of temporary buildings presumably would be essentially the same under *status quo* and *modified* conditions. So far as capital outlay is concerned, therefore, the economic aspects of the Master Plan Survey Team's recommendations for higher education in California, considering the total effects between now and 1975, are confined almost entirely to the impact on the public junior colleges.

Modified Estimates of Annual State Appropriations Required in 1965, 1970, and 1975. Estimates of annual State appropriations required under the *modified* plan presented by the Master Plan

Survey Team and based on the same method of calculation as described earlier are as follows:

Institution	(Millions of Dollars)		
	1965-66	1970-71	1975-76
Junior Colleges			
Current Expenditures	56.1	84.3	120.2
Capital Outlay	......[1]	......[1]	......[1]
State Colleges			
Current Expenditures	102.9	152.9	192.6
Capital Outlay	57.5	42.3	38.4
University of California			
Current Expenditures	144.6	200.4	277.8
Capital Outlay[2]	47.8	52.8	59.4
Total			
Current Expenditures	303.6	437.6	590.6
Capital Outlay[2]	105.3	95.1	97.8
Grand Total[2]	408.9	532.7	688.4

[1] Capital outlay in junior colleges is financed locally.

[2] Capital outlay appropriations for the University's medical centers are not included.

Differences Between *Status* Quo and *Modified* Projections

Generally the proposals of the Master Plan Survey Team will have relatively little effect on annual total expenditures for public higher education for the period from 1960 to 1970. By 1975, however, total expenditures will be greater under the *modified* plan. In terms of total current expenditures, the amounts are somewhat lower ($514,000,000 as compared with $549,000,000 in 1965 and $714,000,000 as compared with $758,000,000 in 1970). By 1975, however, the *modified* total closely approaches the *status quo* total ($942,000,000 as compared with $959,000,000). (The above figures taken from the tabulations on pages 104 and 97 of this report, respectively.)

In terms of State appropriations for current expenditures, the pattern is essentially the same ($304,000,000 *modified* total as compared with $322,000,000 *status quo* total in 1965-66, $438,000,000 as compared with $454,000,000 in 1970-71, and $591,000,000 as compared with $577,000,000 in 1975-76). The *modified* estimates of State appropriations for capital outlays of the state colleges and the University overtake the *status quo* estimates by 1970-71 ($105,000,000 *modified* estimate as compared with $116,000,000 *status quo* estimate for 1965-66; $95,000,000 as compared with $92,000,000 in 1970-71; and $98,000,000 as compared with $88,000,000 in 1975-76). (The above figures are taken from the tabulations on pages 107 and 100 of this report, respectively.) These capital outlay figures make no provision for State financing of junior college construction.

The total junior college capital outlay requirements for the period under study are estimated to be $170,000,000 greater under the *modified* plan than under *status quo* conditions, which is an average of approximately $13,000,000 per year.

To review all the reasons for these conclusions is not necessary. Three major considerations should be noted, however:

1. Although costs vary widely between institutions, the average or typical unit cost for instruction does not differ greatly between junior colleges and state colleges at the lower-division level where the great bulk of such students will increasingly be enrolled.
2. As lower-division students are diverted from a state college or a campus of the University, over-all per-student costs within the institution will tend to increase because of the resulting greater percentage of upper-division and graduate students, whose education is relatively more expensive.
3. Per-student costs for construction of facilities for lower-division students are essentially the same in all three segments of higher education or, in other words, transferring students from a state college or a campus of the University to a junior college makes little difference in cost for physical facilities.

The Impact of Possible Inflationary Factors

This report has emphasized throughout that all data in the study are for the year 1957-58 and that, except where specifically noted, all projections are in terms of *status quo*, defined to be 1957-58. In other words, in accordance with established policy in this series of technical studies, no allowance has been made in the projections for the impact of possible inflation. Just what allowance should be made for future inflation is problematical. If the present trend continues in the same direction for another ten years, these projections, like others made by earlier committees, will appear unrealistic when 1965, 1970, and 1975 arrive.

Recommendation for Establishing Uniform Records

Because this Committee has experienced great difficulty in obtaining uniform and accurate data, *it recommends that the Master Plan Survey Team propose to the Liaison Committee that a study be made to determine the need for uniform systems of records and reports for all segments of higher education in California.*

The Committee further *recommends (1) that each segment of higher education in California develop procedures that will result in systematic and uniform record-keeping of all kinds and extents necessary for essential studies of unit costs; (2) that uniform terminology and definitions be devised and adopted for enrollment data, specifically to include such terms as full-time student, full-time-equivalent student, regular student, part-time student, limited student, graduate student, and all similar terms; (3) that junior colleges keep data on student credit hours comparable with those currently maintained in the state colleges and the University; and (4) that all publicly controlled institutions of higher education maintain reasonably complete and comparable records of their physical plants, including the scheduled utilization of instructional facilities.*[5]

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[5] Legislation enacted in the 1960 Special Session creates a Coordinating Council which has authority to require institutions of public higher education to submit data on costs, selection and retention of students, enrollments, plant capacities and "other matters pertinent to effective planning and coordination." This action, it is believed, provides the machinery to implement the above recommendations.

Appendix

Summary of a Report on Estimated Library Costs in California Institutions of Higher Education

by

A Committee of the California Library Association,
Chairman: Allen D. Covey
President, California Library Association

The Technical Committee on Costs of Higher Education in California requested the California Library Association, through its President, to provide the Committee with some estimates of the total cost of a "model library" for a junior college, a state college, and a campus of the University, and suggested specific sizes as a basis for the proposals. The Committee believed that, in considering the costs involved in expanding facilities for higher education, it should give at least passing consideration to providing adequate libraries.

A special committee of seven members of the California Library Association was appointed by its President and, in compliance with the request of the Technical Committee on Costs, prepared and presented a report on the subject. The following material is based on that report. While the Technical Committee on Costs appreciates the cooperation of the California Library Association and is pleased to present the following summary of its report as a valuable and helpful statement, it does not endorse or otherwise pass judgment on it. No use was made of the data in the Technical Committee's report because a *status quo* was assumed throughout the study.

In considering the problem the Library Committee made certain assumptions, the most important of which are as follows:

1. That the junior colleges in the future will carry increasing responsibility for providing undergraduate education comparable

to that offered by the longer-term institutions, particularly with respect to general education.

2. That the state colleges will have increasing responsibility for upper-division and graduate study.

3. That the University will increase its emphasis upon graduate and professional school activities.

The Library Committee further decided that library standards should be developed for two-year, five-year, and Ph.D.-level institutions because of the probable changes noted above. Also, the Library Committee decided to utilize *Restudy* standards as far as possible. Equipment costs were excluded from all estimates by the Library Committee and *status quo* conditions were assumed in the estimates —not what is desirable. Hence, the Library Committee felt that all cost figures produced in its estimates are minimum. First-class libraries, according to their report, would require even higher expenditures than noted in their recommendations.

Table 1 sets forth recommendations of the Library Committee with respect to a minimum-level library for a junior college.

TABLE 1

TWO-YEAR LEVEL LIBRARY MINIMA

Enrollment	No. of Vols.	Cost of Books	Non-Book Materials Binding and Supplies	Processing Costs	Total Costs for Collection
2,000	45,000	$247,500	$160,650	$180,000	$ 588,150
4,000	75,000	412,500	267,750	300,000	980,250
8,000	120,000	660,000	428,400	480,000	1,568,400

The above table is based on an average cost per volume of $5.50. The figures in Column 4 represent 65 per cent of the Column 3 figures and allow for the purchase of non-book materials, including periodical subscriptions, binding, and general library processing supplies. Column 5 lists the processing costs for full cataloging of books and more limited processing of other materials. Public service staffing costs are not included.

Table 2 presents the costs of a minimum library for a five-year level institution as developed by the Library Committee.

Table 2 shows that the costs of a library for a state college or five-year campus of the University are more than twice as great on a per-student basis as in the junior college. This fact stems from two

TABLE 2

Five-Year Level Library Minima

Enrollment	No. of Vols.	Cost of Books	Non-Book Materials Binding and Supplies	Processing Costs	Total Costs for Collection
5,000	180,000	$1,080,000	$ 702,000	$ 540,000	$2,322,000
10,000	280,000	1,680,000	1,170,000	840,000	3,612,000
20,000	480,000	2,880,000	1,872,000	1,440,000	6,192,000

principal causes. The first is greater unit cost per volume, which, for the five-year level institution, is assumed to be $6.00. The second cause is higher standards, which, in this case, are the existing standards currently recognized by the State Departments of Education and Finance. They are as follows:

1. 60 volumes per student for the first 1,000 FTE
2. 30 volumes per student for the next 4,000 FTE
3. 20 volumes per student for FTE beyond 5,000

Table 3 presents similar data for a library of the University at the Ph.D. level.

TABLE 3

Ph.D.—Level Library Minima

Enrollment	No. of Vols.	Unit Cost	Cost of Basic Collection
5,000	500,000	$11.50	$ 5,750,000
10,000	1,000,000	11.50	11,500,000
20,000	1,750,000	11.50	20,125,000

Here again the increase in costs is very substantial. In the case of the smallest institution of 5,000 students, it is more than double and it triples in the case of the largest size University campus. These sharp increases reflect the fact that a library of this type must be organized on a nation-wide library pattern, based on observation and analysis of nation-wide experience. The computations involved accept the *Restudy* standards as a method of estimating gross size of the collection at any one point in the campus development (100 volumes per student for the first 10,000 students; 75 volumes per student thereafter) but further assumes no top limit on Ph.D.-level libraries. Other assumptions are inherent in the figures but no effort to detail them is made in this report.

The above estimates show clearly that a library in a new institution will cost from roughly $500,000 in the case of the smallest junior college to from $2,000,000 to $6,000,000 in the case of a state college and from $5,000,000 to $20,000,000 in the case of a full University campus.

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